St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Plant Anatomy and Micro Techniques
Course Code	SMBO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Meristems and theories of meristem tissue
- To discuss the type and function of simple and permanent tissue
- To explain the internal structure of moncot and dicot root stem and leaves
- To describe the normal and secondary thickening in dicot stem and root
- To illustrate the Nodal anatomy
- To describe the principles of Microscope.
- To describe the working nature of Light and Electron Microscope (TEM only)
- Explain types of staining techniques and Maceration techniques

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core – I
PLANT ANATOMY AND MICRO TECHNIQUES
(4 hrs/week)

UNIT –I **12Hrs**

Meristems – Characteristics of meristematic tissues – Types, functions and Theories of meristems. Structure and functions of simple and permanent tissues – parenchyma, collenchyma, sclerenchyma, xylem and phloem.

UNIT – II **12Hrs**

Structure of dicot stem and root, structure of monocot stem and root, structure of dicot and monocot leaves.

UNIT – III **12Hrs**

Normal secondary thickening in dicot stem and root, anomalous secondary growth in the stem of *Boerhaavia*and *Dracaena*.

UNIT – IV **12Hrs**

Nodal anatomy: Types of nodes – unilocular, trilocular and multilocular; leaf traces and leaf gaps; epidermal tissue system: stomatal types, hair, trichomes and glands.

UNIT – V **12Hrs**

Microscopy: Principle and working of simple and compound light microscopes and electron microscope (TEM only). Micro techniques – simple staining, double staining and preparation of permanent slides – Maceration

PRACTICALS:

1. To observe and identify the following slides showing
    a. Meristems – shoot apex and root apex
    b. Simple tissues
    c. Xylem elements
2. Primary structure of stem, root and leaves of dicot and monocot plant.
3. Normal secondary thickening in dicot stem and root.
4. Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
5. Maceration technique (Xylem elements only)
6. Demonstration: Preparation of double stained permanent slides.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Meristems – Characteristics of meristematic tissues
2-L2	Theories of meristems
3- L3	Types and functions of meristems
4-L4	Structure and functions of simple Tissue
5-L5	Structure and functions of parenchyma, collenchymas and sclerenchyma
6-L6	Structure and functions of Permanent tissue
7-L7	Structure and functions of xylem
8-L8	Structure and functions of phloem.
9-L9	UNIT II, Structure of dicot stem
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Structure of dicot root
12-L11	Structure of monocot stem
13-L12	Structure of monocot root
14-L13	Structure of dicot leaves.
15-L14	Structure of monocot leaves.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Explain the Secondary Thickening
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Secondary Thickening in dicot stem
21-P2	**College level meeting / Cell function**
22-L19	Explain the Secondary Thickening in dicot root
23-L20	Explain the process of secondary thickening
24-L21	Describe the concept of Cambium formation
25-L22	Analysis the role of secondary tissue formation
26-L23	Determine the functions of secondary tissue

27-L24	Explain the concept of anomalous Secondary growth
28-L25	Explain the anomalous Secondary growth in *Boerhaavia*
29-L26	Explain the anomalous Secondary growth in *Dracaena*
30-L27	UNIT IV, Explain what is Nodal anatomy
31-L28	To give an account on node and Types of node
32-L29	Unilocular node, Trilocular node, multilocular node, Leaf traces and Leaf gaps
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Epidermal Tissue system - Stomatal types, Epidermal Hair and Trichomes
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Working Principles of simple Microscope
39-L34	Working Principles of compound light Microscope
40-L35	Working Principles of Electron Microscope (TEM only)
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Micro Technique – Simple staining
44-L38	Micro Technique – Double staining
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Permanent slide
47-L41	Maceration
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Microscopy Techniques
50-L44	Recall the Micro Techniques (Simple staining, Double staining, Preparation of Permanent slide and Maceration
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To know the concept of Meristems and theories of meristem tissue
CO2	To know the type and function of simple and permanent tissue
CO3	To know the internal structure of moncot and dicot root stem and leaves
CO4	To know the normal and secondary thickening in dicot stem and

	root
CO5	To know the Nodal anatomy
CO6	To know the principles of Microscope.
CO7	To know the working nature of Light and Electron Microscope (TEM only)
CO8	To know types of staining techniques
CO9	To know the Maceration techniques
Experimental Learning	
EL1	To know the internal structure of meristems and simple tissue
EL2	Primary structure of stem, root and leaves of dicot and monocot plant.
EL3	Normal secondary thickening in dicot stem and root.
EL4	Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
EL5	Maceration technique (Xylem elements only) and Demonstration: Preparation of double stained permanent slides.
Integrated Activity	
IA1	Prepare model of Xylem elements
IA2	Preparation of double stained permanent slides for Dicot stem and root

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Algae and Bryophytes
Course Code	SMBO12
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

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Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Plant Diversity and Medicinal Botany
Course Code	SABO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Fungi, Plant Pathology and Lichenology
Course Code	SMBO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To recognize the General characteristic feature of Fungi
- To explain the classification of fungi
- To understand the economic importance of Fungi
- To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
- To understand the plant diseases
- To recognize the General characteristic feature of Lichen
- To explain the classification of Lichen
- To understand the economic importance of Lichen
- To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 3

FUNGI, PLANT PATHOLOGY AND LICHENOLOGY (4 hrs/week)

UNIT I **12Hrs**

General characters and classification of fungi based on Alexopoulous (1962). occurrence, systematic position, structure, reproduction and life cycle of Albugo and Mucor.

UNIT II **12Hrs**

Occurrence, systematic position, structure, reproduction and life cycle of Peziza and Puccinia. Economic importance of fungi: Role of fungi in medicine, industry, agriculture, food and food products.

UNIT III **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Tikka disease of groundnut, Red rot of sugarcane; Paddy blast.

UNIT IV **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Citrus canker, Bunchy top disease of Banana and Tobacco Mosaic viral disease.

UNIT V **12Hrs**

Lichens: General account, types and economic importance of Lichens. Structure and reproduction with special reference to *Usnea.*

PRACTICALS

1. Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.

2. Spotters:

i. Slides - *Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus and Teleutosorus

ii. Disease infected leaves showing Albugo and Puccinia; Usnea habit

iii. Observe and identify the following Plant diseases.

a. Tikka disease of Groundnut

b. Red Rot of Sugarcane

c. Paddy Blast

d. Citrus Canker

e. Bunchy Top of Banana

f. Tobacco Mosaic Viral disease

5. Maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I,** General characters of fungi
2-L2	Classification of fungi based on Alexopoulous (1962).
3- L3	occurrence, systematic position Albugo
4-L4	Structure Albugo
5-L5	Reproduction Albugo
6-L6	life cycle of Albugo
7-L7	occurrence,
8-L8	systematic position of Mucor.
9-L9	Structure of Mucor.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Reproduction of Mucor.
12-L11	life cycle of Mucor.
13-L12	**UNIT II** Occurrence, systematic position, structure, reproduction and life cycle of Peziza
14-L13	Occurrence, systematic position, structure, reproduction and life cycle of Puccinia.
15-L14	Economic importance of fungi
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	**UNIT III,** Introduction to plant diseases
	Entering Internal Test-I Marks into University portal
20-L18	Tikka disease of groundnut with special reference to the symptoms, etiology, dissemination and control measures.
21-P2	**College level meeting / Cell function**
22-L19	Red rot of sugarcane with special reference to the symptoms
23-L20	Red rot of sugarcane with special reference to etiology and dissemination
24-L21	Red rot of sugarcane with special reference to control measures:
25-L22	Paddy blast with special reference to the symptoms and etiology
26-L23	Dissemination and control measures of Paddy blast
27-L24	**UNIT IV** Citrus canker disease with special reference to the symptoms
28-L25	Citrus canker with special reference to etiology and dissemination
29-L26	Bunchy top disease of Banana with special reference to the symptoms
30-L27	Bunchy top disease of Banana with special reference to etiology and dissemination
31-L28	Tobacco Mosaic viral disease with special reference to the symptoms
32-L29	Tobacco Mosaic viral disease with special reference to etiology and dissemination
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	**UNIT V** Lichens: General account,
36-L32	**Allotting portion for Assignment/seminar**

37-IT-II	**Internal Test-II**
38-L33	Types of Lichen.
39-L34	Economic importance of Lichens
40-L35	Occurrence of *Usnea.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Systematic position of *Usnea.*
44-L38	Structure of *Usnea.*
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Reproduction of *Usnea.*
47-L41	Economic importance of *Usnea.*
48-L42	**Allotting portion for Internal Test-III**
49-L43	Economic importance of Lichen
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "**Fungi, Plant Pathology and Lichenology**"
CO1	To recognize the General characteristic feature of Fungi
CO2	To explain the classification of fungi
CO3	To understand the economic importance of Fungi
CO4	To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
CO5	To understand the plant diseases
CO6	To recognize the General characteristic feature of Lichen
CO7	To explain the classification of Lichen
CO8	To understand the economic importance of Lichen
CO9	To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen
Experimental Learning	
EL1	To know the Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.
EL2	*Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus

	and Teleutosorus.
EL3	Prepare the permanent slide
EL4	Preserve the plant Disease
Integrated Activity	
IA1	Prepare the permanent slide
IA2	Preserve the plant Disease

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Cell Biology & Embryology of Angiosperms
Course Code	SMBO 22
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of prokaryotic and eukaryotic cell
- To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
- Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
- Structure of Microsporoangium, Megasporogenesis
- To understand the Double fertilization process

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 4

CELL BIOLOGY & EMBRYOLOGY OF ANGIOSPERMS (4 hrs/week)

UNIT I Cell Biology: Structure of a Plant cell – prokaryotic and eukaryotic cell, structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.

UNIT II Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.

UNIT III Non-living inclusions - cystolith, raphides, starch grains. Cell Division: Mitosis and Meiosis.

UNIT IV Embryology : Structure of Microsporoangium, microsporogenesis, development of male gametophyte. Types and structure of megasporangium, Megasporogenesis, development of female gametophyte, Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type

UNIT V Double fertilization, types of endosperm – nuclear, cellular and helobial; Ruminate endosperm.Structure and Development of dicot embryo (Capsella) and Polyembryony.

PRACTICALS

Cell Biology

1. Mitosis using Onion roots.
2. Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
3. Non-living inclusions – Starch grains, Cystolith and Raphides.

Embryology of Angiosperms

1. Dissect out any one stage of embryo.
2. Identification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony
3. Specimen – Ruminate endosperm

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I** Introduction about Cell Biology
2-L2	Structure of a Plant cell
3- L3	Structure of prokaryotic and eukaryotic cell
4-L4	structure of cell wall
5-L5	Functions of cell wall
6-L6	Structure of plasma membrane
7-L7	Functions of plasma membrane
8-L8	Structure and Functions of endoplasmic reticulum
9-L9	Structure and Functions of ribosome.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II Structure of Mitochondria
12-L11	Functions of Mitochondria
13-L12	Structure and functions of Chloroplast
14-L13	Structure and functions of Nucleus
15-L14	Structure and functions of Chromosome.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Non-living inclusions Introduction
	Entering Internal Test-I Marks into University portal

20-L18	Cystolith
21-P2	**College level meeting / Cell function**
22-L19	Raphides
23-L20	Starch grains
24-L21	Cell Division Introduction
25-L22	Mitosis
26-L23	Meiosis. I
27-L24	Meiosis. II
28-L25	UNIT IV, Embryology Introduction
29-L26	Structure of Microsporoangium
30-L27	Microsporogenesis
31-L28	Development of male gametophyte
32-L29	Types and structure of megasporangium
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Development of female gametophyte
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type
39-L34	UNIT V, Double fertilization
40-L35	Types of endosperm
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Nuclear and Cellular endosperm
44-L38	Helobial endosperm
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Ruminate endosperm
47-L41	Development of dicot embryo
48-L42	**Allotting portion for Internal Test-III**
49-L43	Polyembryony.
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Cell Biology & Embryology of Angiosperms"
	To understand the concept of prokaryotic and eukaryotic cell
CO1	To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
CO2	Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
CO3	Structure of Microsporoangium, Megasporogenesis
CO4	To understand the Double fertilization process
Experimental Learning	
EL1	Mitosis using Onion roots.
EL2	Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
EL3	Non-living inclusions – Starch grains, Cystolith and Raphides.
EL4	dentification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony Ruminate endosperm
Integrated Activity	
IA1	Prepare of Nucleus
IA2	Fixing of Mitosis using Onion roots.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Embryology, Plant Anatomy, Physiology and Biotechnology
Course Code	SABO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Structure and development of microsporangium and megasporangium.
- To explain the concept of Double fertilization,
- To explain the Meristem - Structure and classification
- To know the function of simple and complex tissue
- To Explain the Photosynthesis
- To understand the process of Transpiration Absorption of water Ascent of sap
- To know the Tissue Culture – Scope and importance
- Mass culture of Nostoc and Yeast

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester-II / Allied –II

Semester II/IV

EMBRYOLOGY, PLANT ANATOMY, PHYSIOLOGY AND BIOTECHNOLOGY
4hrs/week

UNIT – I Structure and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.

UNIT – II Meristem - Structure and classification. Simple tissues, complex tissues; Primary structure of Dicot and Monocot stem and root; Structure of leaf; Normal secondary thickening in dicot stem.

UNIT – III Absorption of water – diffusion, osmosis, imbibition, mechanism of absorption of water; Ascent of sap – (cohesion theory only); Transpiration – Types, Mechanism of stomatal transpiration (Starch – sugar hypothesis); Photosynthesis importance of photosynthesis, Mechanism of Photosynthesis – Light and dark reaction (Calvin cycle).

UNIT – IV Nostoc - Morphology, Use as Biofertilizerand Mass cultivation; Structure,multiplication (budding and fission) and Mass culture of Yeast.

UNIT – V Tissue Culture – Scope and importance - totipotency, Nutrient media(M.S medium) Callus and Meristem Culture; Applications of plant tissue culture.

PRACTICAL – 2

1) Dissect out young embryo from Tridax flower bud.

2) Make suitable micro-preparations of dicot and monocot stem, root

3) Demonstrate the physiology experimental set up –Potato osmoscope, Ganong's light screen, Bell jar experiment

4)) Identify the Photograph/ Slide/ Specimen/setup

(i) Nostoc

(ii) Yeast

(iii) Callus culture,

(iv) Meristem culture.

6) Maintain a record note book for external and internal evaluation

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Structure of microsporangium and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.
2-L2	Development of microsporangium
3- L3	Structure and types of megasporangium
4-L4	development of megasporangium
5-L5	Development of male gametophyte

6-L6	Development of female gametophyte
7-L7	Double fertilization
8-L8	Endosperm – types.
9-L9	Structure of dicot embryo.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II II Meristem - Structure and classification
12-L11	Simple tissues, complex tissues
13-L12	Monocot stem and root
14-L13	Dicot stem and root
15-L14	Normal secondary thickening in dicot stem.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Absorption of water – diffusion
	Entering Internal Test-I Marks into University portal
20-L18	Osmosis and imbibition
21-P2	**College level meeting / Cell function**
22-L19	mechanism of absorption of water; Ascent of sap – (cohesion theory only)
23-L20	Transpiration – Types
24-L21	Mechanism of stomatal transpiration (Starch – sugar hypothesis);
25-L22	Importance of photosynthesis
26-L23	Mechanism of Photosynthesis
27-L24	Light and dark reaction (Calvin cycle).
28-L25	Light and dark reaction (Calvin cycle).
29-L26	Light and dark reaction (Calvin cycle).
30-L27	**UNIT IV** Nostoc - Morphology,
31-L28	Use as Biofertilizer
32-L29	Structure and multiplication (budding and fission) of Yeast
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Mass culture of Yeast.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Tissue Culture Introduction
39-L34	Tissue Culture – Scope
40-L35	Tissue Culture –importance
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Totipotency
44-L38	Nutrient media(M.S medium)
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Callus Culture
47-L41	Meristem Culture
48-L42	**Allotting portion for Internal Test-III**
49-L43	Applications of plant tissue culture.
50-L44	Applications of plant tissue culture.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Embryology, Plant Anatomy, Physiology and Biotechnology"
CO1	To understand the Structure and development of microsporangium and megasporangium.
CO2	To explain the concept of Double fertilization,
CO3	To explain the Meristem - Structure and classification
CO4	To know the function of simple and complex tissue
CO5	To Explain the Photosynthesis
CO6	To understand the process of Transpiration Absorption of water Ascent of sap
CO7	To know the Tissue Culture – Scope and importance
CO8	Mass culture of Nostoc and Yeast
Experimental Learning	
EL1	Make suitable micro-preparations of dicot and monocot stem
EL2	Demonstrate the physiology experimental set up –Potato osmoscope
EL3	Ganong's light screen, Bell jar experiment
EL4	(i) Nostoc (ii) Yeast (iii) Callus culture, (iv) Meristem culture.
Integrated Activity	
IA1	Preserve the permanent slide for Mocot , dicot stem and root
IA2	Preparation of mass culture of Yeast and Nostoc

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Organic Farming
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mr. V.K Stanley Raja 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the soil Profile
- To discuss the Organic Matter
- To explain the Soil Air and water
- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
- To explain the Green Manure: Plant wastes
- To explain the Biofertilizers
- Explain the Vermicomposting:

MSU/2017-18/ B. Sc Botany / Semester –III
Skill Based Subject -I (B) ORGANIC FARMING (4hrs/week)

Unit –I **(11hr)**

Soil Science: Brief Account of Soil Profile, Fertility of Soil – Importance of Organic Matter – Water Retentivity and Aeration of Soil.

Unit – II: **(12hr)**

Manure and Manuring: Organic Manure, Types, Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.

Unit – III **(10 hr)**

Green Manure: Plant wastes – Fallen leaves and Twigs, Humus Formation, Green Manuring, Mulching - Leaves of Trees like Pongamia, Gliricidia ,Azadirachta,andCalotropis, Compost making.

Unit-IV **(13hr)**

Biofertilizers: Rhizobium-Importance, Mass Production and Application, VAM Fungi – Importance, Mass production and Applications.

Unit–V **(14hr)**

Vermicomposting: Importance, Application and Production of Vermicompost, Preparation and importance of Panchagavyaas foliar spray

PRACTICALS:

1. To make suitable micro preparations of the following: Lycopodium Stem,
   Adiantum Stipe,
   Marsilea Petiole,
   Rhizome and Sporo carp.
   Pinus Stem and Needle,
   Gnetum Stem and Leaf.
2. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

   Paleobotany (Slide):
   Rhynia stem
   Lepidodendron stem
   Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Soil Science: Introduction
2-L2	Brief Account of Soil Profile
3- L3	Fertility of Soil
4-L4	Importance of Organic Matter
5-L5	Water Retentivity
6-L6	Aeration of Soil.
7-L7	UNIT II Manure and Manuring: Introduction, , Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
8-L8	Organic Manure
9-L9	Organic Manure Types
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Animal Wastes – Cattle Dung and Urine
12-L11	Poultry Wastes
13-L12	Slaughter Wastes
14-L13	Piggery Wastes
15-L14	Fishery Wastes
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**

18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III Green Manure: Plant wastes
	Entering Internal Test-I Marks into University portal
20-L18	Plant wastes – Fallen leaves and Twigs
21-P2	**College level meeting / Cell function**
22-L19	Humus Formation
23-L20	Green Manuring
24-L21	Mulching - Leaves of Trees like Pongamia
25-L22	Mulching - Leaves of Trees like Gliricidia
26-L23	Azadirachta
27-L24	Calotropis
28-L25	Compost making
29-L26	Biofertilizers: Rhizobium-Importance
30-L27	Mass production of VAM
31-L28	Mass production of VAM
32-L29	Applications of VAM
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Vermicomposting:
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Importance of Vermicomposting
39-L34	Vermiculture
40-L35	Production of Vermicompost Indoor
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Production of Vermicompost Out door
44-L38	Preparation of Panchagavyaas
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Panchagavyaas
47-L41	Application of Panchagavyaas
48-L42	**Allotting portion for Internal Test-III**
49-L43	Dosage of Panchagavyaas
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the soil Profile
CO2	➢ To discuss the Organic Matter
CO3	➢ To explain the Soil Air and water
CO4	➢ To Discuss the Stelar Evolution in Pteridophytes.
CO5	➢ To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
CO6	➢ To explain the Green Manure: Plant wastes
CO7	➢ To explain the Biofertilizers
CO8	➢ Explain the Vermicomposting:

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	SMBO 31
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the general character of Pteridophytes
- To discuss the classification of Pteridophytes
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea

- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character of Gymnosperms
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
- Economic importance of Gymnosperms
- Explain the Geological Time Scale

MSU/2017-2018/B.Sc. Botany/Semester-III/Core Paper – 5

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY (4hrs/week)

UNIIT I **(12L)**

Pteridophytes: General Characteristics and Classification of Pteridophytes (Sporne 1966), Psilotum and Lycopodium: Distribution, Systematic Position, Structure, Reproduction and Life History (need not study the development of gametophyte, sex organs and sporophyte).

UNIT II **(11L)**

Adiantum, Marsilea: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle (need not study the development of gametophytes, sex organ and sporophyte), Stelar Evolution in Pteridophytes.

UNIT III **(13L)**

Gymnosperms: General Characteristics and Classification of Gymnosperms (David Bierhorst, 1971), Pinus: Distribution, Systematic Position, Structure, Reproduction and Life History

UNIT IV **(14L)**

Gnetum: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of (need not study the Development of Sex Organs and Sporophyte). Economic Importance of Gymnosperms.

UNIT V **(10L)**

Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.

PRACTICALS:

3. To make suitable micro preparations of the following: Lycopodium Stem,
   Adiantum Stipe,
   Marsilea Petiole,
   Rhizome and Sporo carp.
   Pinus Stem and Needle,
   Gnetum Stem and Leaf.
4. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

   Paleobotany (Slide):
   Rhynia stem
   Lepidodendron stem
   Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Pteridophytes: General Characteristics
2-L2	Classification of Pteridophytes (Sporne 1966)
3- L3	Distribution, Systematic Position of Lycopodium
4-L4	Structure of Lycopodium
5-L5	Reproduction and Life History of Lycopodium
6-L6	Unit II Occurrence of Adiantum
7-L7	Distribution, Systematic Position of Adiantum
8-L8	Structure of Adiantum

9-L9	Reproduction and Life History of Adiantum
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Occurrence of Marsilea
12-L11	Distribution, Systematic Position of Marsilea
13-L12	Structure of Marsilea
14-L13	Reproduction and Life History of Marsilea
15-L14	Unit III Gymnosperms: General Characteristics
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Classification of Gymnosperms
	Entering Internal Test-I Marks into University portal
20-L18	Distribution, Systematic Position of Pinus
21-P2	**College level meeting / Cell function**
22-L19	Structure of Pinus
23-L20	Reproduction of Pinus
24-L21	Reproduction of Pinus
25-L22	Life History of Pinus
26-L23	UNIT IV Gnetum: Occurrence
27-L24	Systematic Position of Gnetum
28-L25	Structure of Gnetum
29-L26	Reproduction of Gnetum
30-L27	Life Cycle of of Gnetum
31-L28	Economic Importance of Gymnosperms
32-L29	Revision of IV Unit
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Geological Time Scale
39-L34	Methods of Fossilization
40-L35	Methods of Fossilization
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Brief Study of Rhynia
44-L38	Brief Study of Rhynia
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Brief Study of Lepidodendron
47-L41	Brief Study of Lepidodendron
48-L42	**Allotting portion for Internal Test-III**
49-L43	Brief Study of Lyginopteris.
50-L44	Brief Study of Lyginopteris.
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**

54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To understand the general character of Pteridophytes
CO2	To discuss the classification of Pteridophytes
CO3	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea
CO4	To Discuss the Stelar Evolution in Pteridophytes.
CO5	To understand the general character of Gymnosperms
CO6	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
CO7	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
CO8	Economic importance of Gymnosperms
CO9	Explain the Geological Time Scale
Experimental Learning	
EL1	micro preparations of the following: Lycopodium Stem, Adiantum Stipe, Marsilea Petiole, Rhizome and Sporo carp. Pinus Stem and Needle,
EL2	To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.
EL3	Paleobotany (Slide): Rhynia stem Lepidodendron stem Lyginopteris stem.
Integrated Activity	
IA1	Prepare Permanent Slide for Pinus
IA2	Prepare Permanent Slide Marsilea

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature

Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Microbiology and Techniques In Biology
Course Code	SMBO41
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. V.K. Stanley Raja 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Microbiology
- To discuss the Five Kingdom Classification
- To explain the Gram Staining
- To describe the Virus and Bacteriophage
- To illustrate the Bacterio flora in Milk
- To describe the principles of Microscope.
- To describe the working nature of UV Spectrometer, MRI, ECG

MSU/2017-18/ B. Sc Botany/ Semester –IV /Core paper-6

MICROBIOLOGY AND TECHNIQUES IN BIOLOGY (4hrs/week)

UNIIT I (13L)

Microbiology: Brief History and Development, Classification of Microorganisms (Whittaker‟s Five Kingdom Concept), Bacteria - Outline of Classification (Bergey‟smanual), Ultra Structure, Nutritional Types and Reproduction of Bacteria, Media Preparation and Pure Culture techniques of Bacteria, Staining Technique - Gram Staining.

UNIT II (12L)

Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.

UNIT III (12L)

Microbes: Microbes in Food Production, Spoilage, Poisoning and Preservation. Bacteria Flora in Milk, Pasteurization of Milk and Milk Products, Bacterial Pathogens and Water Pollution, Drinking Water as a Vehicle of Diseases, Purification of water.

UNIT IV (11L)

Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.

UNIT V (12L)

Electrophoresis: Basic principles, electrophoretic mobility, factors, isoelectric focusing. Types- vertical and horizontal agarose and poly acrylamide gel electrophoresis, detection and recovery of electrophorogram. Gel documentation system. X-ray crystallography.

PRACTICALS

1. Preparation of Culture Media for Bacteria.

2. Preparation of Serial Dilution.

3. Isolation of Bacteria – Streak Plate Method

4. Identify the type of Bacteria using Gram Staining.

5. Analysis of Milk – Methylene Blue Dye Reduction Test.

6. Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Microbiology: Brief History
2-L2	Development of Microbiology
3- L3	Classification of Microorganisms (Whittaker‟s Five Kingdom Concept)
4-L4	Bacteria - Outline of Classification
5-L5	Bacteria - Outline of Classification
6-L6	Ultra Structure of Bacteria
7-L7	Nutritional Types of Bacteria
8-L8	Reproduction of Bacteria
9-L9	Media Preparation and Pure Culture techniques of Bacteria,
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Staining Technique - Gram Staining.

12-L11	UNIT II Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.
13-L12	Structure of HIV
14-L13	Reproduction of HIV
15-L14	T4 Bacteriophages, Viroids, Virions and Mycoplasma
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Transmission of Viruses and Purification of Viruses.
	Entering Internal Test-I Marks into University portal
20-L18	UNIT III
21-P2	**College level meeting / Cell function**
22-L19	Microbes: Microbes in Food Production
23-L20	Spoilage,
24-L21	Poisoning
25-L22	Preservation
26-L23	Bacteria Flora in Milk
27-L24	Pasteurization of Milk and Milk Products
28-L25	Bacterial Pathogens
29-L26	Water Pollution, Drinking Water as a Vehicle of Diseases
30-L27	Purification of water.
31-L28	UNIT IV, Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.
32-L29	Instruments: Principles, Working Mechanism and Applications of UV Spectrometer
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Instruments: Principles, Working Mechanism and Applications of Centrifuge
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Instruments: Principles, Working Mechanism and Applications of ECG
39-L34	Instruments: Principles, Working Mechanism and Applications of MRI
40-L35	Instruments: Principles, Working Mechanism and Applications of Positron emission tomography.
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Electrophoresis: Basic principles,
44-L38	electrophoretic isoelectric focusing
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Types- vertical and horizontal agarose
47-L41	Acrylamide gel electrophoresis
48-L42	**Allotting portion for Internal Test-III**
49-L43	Detection and recovery of electrophorogram.
50-L44	X-ray crystallography.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the concept of Microbiology
CO2	➢ To discuss the Five Kingdom Classification
CO3	➢ To explain the Gram Staining
CO4	➢ To describe the Virus and Bacteriophage
CO5	➢ To illustrate the Bacterio flora in Milk
CO6	➢ To describe the principles of Microscope.
CO7	➢ To describe the working nature of UV Spectrometer, MRI, ECG
Experimental Learning	
EL1	Preparation of Culture Media for Bacteria.
EL2	2. Preparation of Serial Dilution.
EL3	3. Isolation of Bacteria – Streak Plate Method
EL4	4. Identify the type of Bacteria using Gram Staining.
EL5	5. Analysis of Milk – Methylene Blue Dye Reduction Test.
	Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.
Integrated Activity	
IA1	Prepare the gram Staining for the given Bacterial Culture
IA2	Isolation of Bacteria – Streak Plate Method

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Preservation of fruits and vegetables
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. S.Darwin 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
- To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
- To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
- To describe the Sauce, Pickles & Ketchup
- To illustrate the Canning of Fruits& Vegetables

MSU/2017-18/ B. Sc Botany / Semester –III Skill Based Subject -I (A)
PRESERVATION OF FRUITS AND VEGETABLES (4hrs/week)

Unit-I (11L)

Fruits and Vegetables: Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.

Unit-II (13L)

Principles of Preservation: Importance and Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.

Unit-III (13L)

Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.

Unit- IV (11 L)

Preparation of Chutney, Sauce, Pickles & Ketchup: Preparation of Chutney- Mango, Sauce – Tomato,Pickles- Lime, Mango and Garlic, KetchupTomato. Drying of fruits: Banana, Mango, Grapes and Fig.

Unit- V (12 L)

Canning of Fruits& Vegetables: Mango and Banana; Tomato, Carrot, Bean and Mushrooms.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	Fruits and Vegetables: Nutritive values
2-L2	factors affecting storage of Fruits
3- L3	factors affecting storage of Vegetables
4-L4	Spoilage of fruits - microbial, enzymatic and insects.
5-L5	Spoilage of vegetables - microbial, enzymatic and insects.
6-L6	Unit II Principles of Preservation
7-L7	Importance of Preservation
8-L8	Methods of Preservation
9-L9	Refrigeration
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Freezing
12-L11	Canning,
13-L12	Drying
14-L13	Dehydration
15-L14	Chemical preservatives.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis**-
19-L17	UNIT III Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
	Entering Internal Test-I Marks into University portal
20-L18	Methods of preparation of Fruit Juice- Orange,
21-P2	**College level meeting / Cell function**
22-L19	Squashes- grape
23-L20	Squashes- Pine apple
24-L21	Jam - Tomato
25-L22	Jam - Mixed Fruit
26-L23	Jellies- Guava
27-L24	UNIT Preparation of Chutney.
28-L25	Drying of fruits

29-L26	Sauce
30-L27	Pickles
31-L28	Ketchup
32-L29	Preparation of Chutney- Mango
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Pickles- Lime
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Pickles Mango
39-L34	Pickles Garlic
40-L35	Drying of fruits
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Drying of fruits: Banana
44-L38	Drying of fruits: Mango
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Drying of fruits: Grapes
47-L41	Drying of fig
48-L42	**Allotting portion for Internal Test-III**
49-L43	Clarifying the doubts in the Syllabus
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
CO2	➢ To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
CO3	➢ To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit ,

	Jellies- Guava.
CO4	➢ To describe the Sauce, Pickles & Ketchup
CO5	➢ To illustrate the Canning of Fruits& Vegetables

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Biotechnology and Genetic Engineering
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. D. Abiya Chelliah
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the principle of Tissue Culture Laboratory
- To know the Meristem Culture and Artificial Seed.
- Basic knowledge about Techniques of genetic engineering
- To know about Identification of Recombinants
- To explain the concept of DNA transfer techniques.

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 1A

BIOTECHNOLOGY AND GENETIC ENGINEERING (5hrs/week)

UNIT1 (15L)

Tissue Culture: Introduction, definition, history, scope and importance of plant tissue culture, Totipotency of cells, Tissue culture laboratory- organization and requirements, Sterilization techniques, Nutrient media- composition and preparation.

UNIT 11 (14L)

Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Protoplast isolation, fusion, selection of hybrids and regeneration.Cybrids– production and applications, Artificial seed: production, advantages and disadvantages.

UNIT 111 (16L)

Techniques of genetic engineering: Isolation of specific genes, enzymes used in gene cloning, Cloning Vectors - Plasmids,Cosmids and Phagemids,cDNALibraries,Agrobacterium mediated gene transfer in plants,GM plants – BtBrinjal, Bt Cotton, Golden rice. Bioethical issues.

UNIT 1V (16L)

Identification of Recombinants: Insertional inactivation, Immunochemical Method and Colony Hybridization Technique.Selection of Recombinant using Selective Medium and reporter genes, Blotting Techniques – Southern, Northern and Western Blotting.

UNIT V (14L)

Mutagenesis& DNA transfer techniques: Site directed mutagenesis and random mutagenesis; DNA transfer techniques: Physical method Microinjection, Chemical method-Calcium phosphate method, Electrical method Electroporation, Natural-Conjugation and bacterial transformation.

Spotters/Photographs

i. Callus culture from Carrot Explant.

ii. Protoplast Isolation. ‘iii. Plasmids – Ti plasmids iv. Gene cloning in E. Coli. v. Agrobacterium mediated gene transfer. vi. Blotting Techniques.

vii. Colony Hybridization technique. viii. Transgenic Plants prescribed in the syllabus. To maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Tissue Culture: Introduction,
2-L2	Definition of Tissue Culture
3- L3	history, scope and importance of plant tissue culture
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Totipotency of cells
8- L1	Tissue culture laboratory- organization
9- L8	Tissue culture laboratory requirements
10- L9	Sterilization techniques
11-L10	.Protoplast Isolation
12-P11	Protoplast Isolation
13-P12	Protoplast Isolation
14-P13	Practical
15-L14	Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Artificial seed: production, advantages and disadvantages.
16-L15	Protoplast isolation, fusion, selection of hybrids and regeneration.
17- L16	Cybrids– production and applications,
18-L17	Artificial seed: production
19- P18	Plasmids – Ti plasmids
20- P19	Plasmids – Ti plasmids
21-P20	Plasmids – Ti plasmids
	Internal Test I begins
22- L21	Artificial seed: production, advantages and disadvantages
23- IT-1	**Internal Test-I**
24- L22	Artificial seed: production, advantages and disadvantages
25- L23	Classification of amino acids.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Techniques of genetic engineering:
28- L26	enzymes used in gene cloning
29- P27	Gene cloning in E. Coli.
30- P2	Gene cloning in E. Coli.
31-P28	Gene cloning in E. Coli.
32-L29	Cloning Vectors - Plasmids

33-L30	Cosmids and Phagemids
34- L31	cDNALibraries
35- L32	Agrobacterium mediated gene transfer in plants
36- L33	GM plants – Bt Brinjal, Bt Cotton, Golden rice. Bioethical issues.
37- P34	Agrobacterium mediated gene transfer. vi. Blotting Techniques
38-P35	Agrobacterium mediated gene transfer. vi. Blotting Techniques
39- P36	Agrobacterium mediated gene transfer. vi. Blotting Techniques
40- L37	Golden rice.
41- L38	Golden rice.
42-P3	Bioethical issues.
43- L39	Bioethical issues.
44- P40	Identification of Recombinants: Insertional inactivation, Blotting Techniques – Southern, Northern and Western Blotting.
45- P41	Immunochemical Method and Colony Hybridization Technique
46- P42	Selection of Recombinant using Selective Medium and reporter genes
47- L43	Blotting Techniques – Southern
	Internal Test II begins
48- L44	Blotting Techniques –Northern and Western Blotting
49-IT-II	**Internal Test-II**
50-L45	Blotting Techniques Western Blotting
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Mutagenesis& DNA transfer techniques: Natural-Conjugation and bacterial transformation.
53- P48	Site directed mutagenesis and random mutagenesis;
54- P49	Site directed mutagenesis and random mutagenesis;
55- P50	DNA transfer techniques: Physical method Microinjection
56- L51	Practical
57- L52	Bioenergetics of Chloroplast
58- L53	Mitochondria,
59-P4	**College level meeting/ function**
60- L54	Chemical method-Calcium phosphate method
61- L55	Electrical method Electroporation,
62- L56	Natural-Conjugation and bacterial transformation
63- L57	Natural-Conjugation and bacterial transformation
64- L58	Natural-Conjugation and bacterial transformation
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper**

	discussion
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	➢ To know the principle of Tissue Culture Laboratory
CO2	➢ To know the Meristem Culture and Artificial Seed.
CO3	➢ Basic knowledge about Techniques of genetic engineering
CO4	➢ To know about Identification of Recombinants
CO5	➢ To explain the concept of DNA transfer techniques.
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Horticulture and plant Breeding
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Mr. V.K Stanley Raja
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the Scope, importance and divisions of Horticulture
- To know the : Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components
- Basic knowledge Kitchen garden: Establishment, Organic manures and growth regulators in horticulture,
- To know about Plant Breeding Nature, Scope and Objectives
- To explain the concept of Mutation breeding: Procedure and practices, Mutagens

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 2A

HORTICULTURE & PLANT BREEDING (5hrs/week)

UNIT - I (14L)

Horticulture: Scope, importance and divisions, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.

UNIT - II (16L) Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets, water garden, terrarium, topiary and Bonsai.

UNIT - III (15L) Kitchen garden: Establishment, Organic manures and growth regulators in horticulture, Plant protection measures for horticulture, Seed Propagation methods, Preparation of Nursery beds, Transplantation – steps and Methods.

UNIT - IV (16L) Plant Breeding Nature, Scope and Objectives, Plant introduction, selection methods (pure line and mass), Hybridization techniques, Heterosis breeding, Interspecific and intergeneric hybridization.

UNIT – V (14L) Mutation breeding: Procedure and practices, Mutagens, Polyploidy breeding and its applications.Breeding for disease resistance.

PRACTICALS

Demonstration

i. Vegetative methods of propagation.

a. Cutting-Stem and Leaf cutting

b. Layering-Simple and air layering.

c. Grafting – Tongue grafting.

d. Budding – T-budding.

ii. Garden components -Rockery, hanging baskets, terrarium and topiary.

iii. Garden implements-spade, water can, pruning scissors, digging fork

iv. Designing Kitchen Garden.

v. Plant Breeding: Emasculation and Bagging methods

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin
1-L1	Horticulture: Scope, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.
2-L2	Horticulture: importance
3- L3	Horticulture: divisions
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Vegetative propagation methods- cutting,
8- L1	Vegetative propagation methods layering,
9- L8	Vegetative propagation methods- budding,
10- L9	Vegetative propagation methods- grafting
11-L10	. Vegetative propagation methods- vegetative propagules
12-P11	Unit 11 Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets,
13-P12	Formal Gardening
14-P13	Informal Gardening
15-L14	Design and Establishment of Garden
16-L15	Garden components
17- L16	garden implements
18-L17	lawn making
19- P18	glass house
20- P19	rockery
21-P20	hanging baskets
	Internal Test I begins
22- L21	water garden, terrarium, topiary and Bonsai.
23- IT-1	**Internal Test-I**
24- L22	Kitchen garden: Establishment,
25- L23	Organic manures and growth regulators in horticulture
26- L24	**Test Paper distribution and result analysis**

	Entering Internal Test-I Marks into University portal
27- L25	Plant protection measures for horticulture,
28- L26	Seed Propagation methods
29- P27	Preparation of Nursery beds
30- P2	Transplantation – steps
31-P28	Methods of Transplantation
32-L29	Plant Breeding Nature,.
33-L30	Scope and Objectives,
34- L31	Plant introduction, selection methods (pure line and mass),
35- L32	Hybridization techniques, Heterosis breeding
36- L33	, Interspecific
37- P34	Intergeneric hybridization
38-P35	Mutation breeding:
39- P36	Procedure and practices of
40- L37	Mutagens, Polyploidy breeding
41- L38	and its applications.Breeding for disease resistance.
42-P3	a. Cutting-Stem and Leaf cutting
43- L39	b. Layering-Simple and air layering.
44- P40	c. Grafting – Tongue grafting.
45- P41	d. Budding – T-budding.
46- P42	Garden components -Rockery,
47- L43	Garden components - hanging baskets
	Internal Test II begins
48- L44	terrarium and topiary.
49-IT-II	**Internal Test-II**
50-L45	Garden implements-spade,
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	ii. hanging baskets,
53- P48	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
54- P49	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
55- P50	Plant Breeding: Emasculation and Bagging methods
56- L51	Plant Breeding: Emasculation and Bagging methods
57- L52	
58- L53	
59-P4	**College level meeting/ function**
60- L54	Garden components
61- L55	iii. Garden implements
62- L56	
63- L57	
64- L58	
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical

69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	To know the Scope, importance and divisions of Horticulture
CO2	To know the : Types of gardens – Formal
CO3	Basic knowledge Kitchen garden: Establishment
CO4	To know about Plant Breeding Nature
CO5	To explain the concept of Mutation breeding: Procedure and practices
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Morphology and Taxonomy of Angiosperms
Course Code	JMPB51
Class	III year (2018-2019)
Semester	Odd
Staff Name	Dr. M. Amutha
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the morphology of the plant parts.
- To know the structure of various types of inflorescences, floral parts, and fruits.
- Basic knowledge about taxonomy and classification of angiosperm plants.
- To study about binomial nomenclature.
- To know about angiosperm families.
- To study the preparation of dichotomous key.
- To know about the useful plant parts and their uses.

Syllabus

UNIT 1 Morphology_ Modification of Root, Stem and Leaf. Leaf - Simple, Compound; Phyllotaxy; Inflorescence – Types; Flower- Floral parts; Fruits- Types.

UNIT 11 Principles of taxonomic Hierarchy (Order, Family, Genus and Species Level). Systems of classification (with merits and demerits) – Natural – Benthem aqnd Hooker system, Phylogenetic – Engler and Prantl System; Binomial nomenclature – ICBN, Dichotomous key, Preparation, Maintenance and significance of Herbarium.

UNIT 111 Critical study of the following Families and their Economic importance: Annonaceae, Sterculiaceae, Rutaceae, Caesalpiniaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Sapotaceae.

UNIT IV Convolvulaceae, Asclepiadaceae, Apocynaceae, Lamiaceae, Euphorbiaceae, Amaranthaceae, Liliaceae, Cannaceae and Poaceae.

UNIT V Binomial, Family, Useful part and Uses of the Following Plant Products: Fibres- Jute, Cotton and Hemp; Timber- Teak, Rosewood and Neem; Resin – Camphor and Canada balsam; Cosmeticsb- *Aloe*, Sandal wood Turmeric; Beverages – Tea, Coffee and *Cocoa*; Oil – Coconut oil, Eucalyptus oil and *Pongamia* oil; Fruits and Vegetables- Banana, Jackfruit, Pineapple; Medicinal plants – *Adatoda*, Clove and *Acorus calamus*

PRACTICALS:

1. Morphological identification of plant parts and their modifications.

2. Technical description of plant parts and dissection of floral parts of plants with reference to the families prescribed in the syllabus.

3. Field trips (minimum 2 days) to places under the guidance of teachers to study plants in their natural habitat and submit a report.

4. Preparation of dichotomous key.

5. Identify and comment on the useful plant parts or plants prescribed in the syllabus.

6. Preparation and submission of 10 herbarium sheets.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of morphology
2-L2	Brief account on root modification,
3- L3	Stem and Leaf modification.
4-P4	Practical
5-P5	Practical – Morphology modifications.
6-P6	Practical
7-L7	Brief account about phyllotaxy.
8- L1	Inflorescence.
9- L8	Fruits – Types.
10- L9	Taxanomical Hierarchy.
11-L10	Brief study about Natural classification.
12-P11	Practical

13-P12	Practical – Dissectout Annonaceae, Sterculiaceae.
14-P13	Practical
15-L14	Phylogenetic system of Classification.
16-L15	ICBN
17- L16	Dichotomous key preparation.
18-L17	Preparation steps of Herbarium
19- P18	Practical
20- P19	Practical – Dissectout Rutaceae and Caesalpiniaceae.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Annonaceae
25- L23	Sterculiaceae
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Cucurbitaceae
28- L26	Apiaceae
29- P27	Practical
30- P2	Practical – C Apiaceae, Covolvulaceae
31-P28	Practical
32-L29	Caesalpiniaceae
33-L30	Sapotaceae
34- L31	Rubiaceae
35- L32	Convolvulaceae
36- L33	Asclepiadaceae
37- P34	Practical
38-P35	Practical – Rubiaceae, Sapotaceae , Apocynaceae
39- P36	Practical
40- L37	Lamiaceae
41- L38	Euphorbiaceae
42-P3	Amaranthaceae
43- L39	Cannaceae
44- P40	Practical
45- P41	Practical – Euphorbiaceae, Asclepiadaceae
46- P42	Practical
47- L43	Liliaceae
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Uses of Fibres.
53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Lamiaceae, Cannaceae, Poaceae
56- L51	Practical

57- L52	Timber
58- L53	Resin
59-P4	**College level meeting/ function**
60- L54	Cosmatics
61- L55	Beverages
62- L56	Oil
63- L57	Fruits and vegetables
64- L58	Medicinal plants
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Amaranthaceae, Cannaceae, Liliaceae
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about angiospermic plants.
CO2	Know about angiospermic plants
CO3	Know about the different dicot and monocot plants.
CO4	To learn about different floral parts.
CO5	To know about different economic importance of plants.
CO6	To know about uses of various oils, timbers, bevarages etc.
CO7	To know about uses of medicinal plants.
CO8	To know about classification of plants.
CO9	To know about herbarium preparation.
Experimental Learning	
EL1	Know about dichotomous key preparation.
EL2	Know about how to idendify the dicot and monocot plants.
EL3	Know about taxonomical hierarchy.
EL4	Know about differentiation of floral parts.
Integrated Activity	
IA1	To visit different fields to study the plants in their natural habitat.
IA2	To attended two days study tour about Taaxonomy.

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Plant Physiology
Course Code	GMPB61
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. Mr. D. Abiya Chelliah
Credits	6
L. Hours /P. Hours	6 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the physiology of the plans.

- To know the structure of various types of stomata, chloroplast, and phytohormons .
- Basic knowledge about physiology and classification of macro nutrients and micronutrients.
- To study about C3, C4 and CAM pathways.
- To know about translocation of organic solutes.
- To study the transpiration pull and cohesion theory.
- To know about various phytohormones and their uses.

Syllabus

UNIT I

WaterRelationsof Plants&Transpiration: Water Relations: Imbibition, Diffusion and Osmosis; Water Potential- Definition, Components, Absorption of Water – Mechanism and Factors affecting Water Absorption; TranspirationDefinition, Types, Significance and Mechanism of Stomatal Transpiration- steps and theories, Guttation

UNIT II

Ascent of Sap&Mineral nutrition: Ascent of Sap –Definition, Path of Ascent of Sap, Mechanism- Transpiration Pull and Cohesion Theory.Mineral nutrition - Macro and Micro Nutrients-Absorption of Mineral Salts – Mechanism, Translocation of Organic Solutes - Mechanism of Phloem Transport (Munch‟s Mass flow hypothesis).

UNIT III

Photosynthesis&.Respiration: Photosynthesis:Light and Dark Reactions - Photosynthetic Electron Transport Chain and Photophosphorylation (Cylic and Non cyclic); Carbon Assimilation - C3, C4 and CAM Pathways andits Significance;Respiration: Glycolysis, TCA cycle and Oxidative Phosphorylation.

UNIT IV

Growth and Development: Growth Curve and phases of growth;Phytohormones:Physiological Effect and Practical Applications - Auxin, Gibberellic acid, Cytokinin, Ethylene and Abscisicacid;Photoperiodism and Vernalization.

UNIT V

Seed Dormancy: Causes and Methods ofBreaking Dormancy; Stress Physiology - Classification– Bioticand Abiotic, Stress Factors- Response of Plants to Salt, Drought, Frost and Heat

PRACTICALS

1. Water Potential by Gravimetric Method.

2. Water Potential by Falling Drop Method.

3. Osmotic Potential by Plasmolytic Method.

4. Rate of Photosynthesis in Different Concentrations of Bi-Carbonate – Bubble Method.

5. Measurement of Stomatal Index.

6. Effect of Temperature on Permeability of Plasma Membrane.

7. Separation of Chlorophyll Pigments by Ascending Paper Chromatography.

DEMONSTRATION: 1. Tissue Tension

2. Suction due to Transpiration

3. Ganong‟ sPhotometer

4. Fermentation

5. Arc Auxanometer

6. Clinostat

7. Phototropism

Spotters

1. Absorption Spectrum of Chlorophylls

2. Growth curve. To maintain a record note book.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of Imbibition
2-L2	Brief account on Diffusion,
3- L3	Osmosis , Water Potential and Water Absorption.
4-P4	Practical
5-P5	Practical – Water Potential by Gravimetric method
6-P6	Practical
7-L7	Brief account on Transpiration
8- L1	Mchanism of Stomatal Traspiration
9- L8	Significance of Transpiration.

10- L9	Ascent of sap
11-L10	Brief study about Path of Ascent of sap.
12-P11	Practical
13-P12	Practical – Water Potential by Falling Drop Method.
14-P13	Practical
15-L14	Study about Transpiration Pull Cohesion Thory.
16-L15	Mineral Nutrition
17- L16	Various types of Macronutrients.
18-L17	Different types of micronutruients.
19- P18	Practical
20- P19	Practical – Osmotic Potential by Plasmolytic Method.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Absorption of Mineral Salts.
25- L23	Study about Translocaton of Organic solutes.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Mechanism of Phloem Transport.
28- L26	Study about Light and Dark Reactions.
29- P27	Practical
30- P2	Practical – Quantitative Estimation of Total Chloophyll Content in Leaves.
31-P28	Practical
32-L29	Study about Electron Transport Chain.
33-L30	Photophosphorylation
34- L31	C3 Cycle
35- L32	C4 Cycle
36- L33	CAM Pathway.
37- P34	Practical
38-P35	Practical – Quantitative Estimation of Carotenoid Content in Flowers.
39- P36	Practical
40- L37	Photorespiration.
41- L38	Glycolysis
42-P3	TCA Cycle
43- L39	Study about Oxidative Phosphorylation
44- P40	Practical
45- P41	Practical – Rate of Photosynthesis in Different Concentrations of Bi-Carbonate-Bubble Method.
46- P42	Practical
47- L43	Study about Growth and Growth Curve
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Different Phases of Growth Curve.

53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Measurement of Stomatal Index.
56- L51	Practical
57- L52	Growth Hormones.
58- L53	Auxin and Gibberellic Acid
59-P4	**College level meeting/ function**
60- L54	Cytokinin, Ethylene and Absisic acid
61- L55	Various methods of Seed Dormancy and Breaking of Seed Dormancy.
62- L56	Stress Physiology
63- L57	Biotic and Abiotic Factors of Stress
64- L58	Differentiate Photoperiodism and Vernalization.
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Effect of Temperature on Permeability of Plasma Membrane.
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about Physiology of plants.
CO2	Know about absorption mechanism of plants.
CO3	Know about the different mechanism of Stomatal Transpiration in Plants.
CO4	To learn about differen kind of Photophosphorylations.
CO5	To know about Oxidative Phosphorylation..
CO6	To know about uses of Auxin, Gibbrellic Acid, Cytokinin etc.
CO7	To know about Photoperiodism and Vernalisation.
CO8	To know about Seed Dormancy.
CO9	To know about Stress Physiology.
Experimental Learning	
EL1	Know about Stomatal Index.
EL2	Know about how to Measure the Photosynthetic Rate.
EL3	Know about Stomatal Index.
EL4	Study about Water Potential.

Integrated Activity	
IA1	Study about Osmosis.
IA2	To study Tissue Tension.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Plant Anatomy and Micro Techniques
Course Code	SMBO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Meristems and theories of meristem tissue
- To discuss the type and function of simple and permanent tissue
- To explain the internal structure of moncot and dicot root stem and leaves
- To describe the normal and secondary thickening in dicot stem and root
- To illustrate the Nodal anatomy
- To describe the principles of Microscope.
- To describe the working nature of Light and Electron Microscope (TEM only)
- Explain types of staining techniques and Maceration techniques

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core – I
PLANT ANATOMY AND MICRO TECHNIQUES
(4 hrs/week)

UNIT –I **12Hrs**

Meristems – Characteristics of meristematic tissues – Types, functions and Theories of meristems. Structure and functions of simple and permanent tissues – parenchyma, collenchyma, sclerenchyma, xylem and phloem.

UNIT – II **12Hrs**

Structure of dicot stem and root, structure of monocot stem and root, structure of dicot and monocot leaves.

UNIT – III **12Hrs**

Normal secondary thickening in dicot stem and root, anomalous secondary growth in the stem of *Boerhaavia*and *Dracaena*.

UNIT – IV **12Hrs**

Nodal anatomy: Types of nodes – unilocular, trilocular and multilocular; leaf traces and leaf gaps; epidermal tissue system: stomatal types, hair, trichomes and glands.

UNIT – V **12Hrs**

Microscopy: Principle and working of simple and compound light microscopes and electron microscope (TEM only). Micro techniques – simple staining, double staining and preparation of permanent slides – Maceration

PRACTICALS:

1. To observe and identify the following slides showing
    a. Meristems – shoot apex and root apex
    b. Simple tissues
    c. Xylem elements
2. Primary structure of stem, root and leaves of dicot and monocot plant.
3. Normal secondary thickening in dicot stem and root.
4. Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
5. Maceration technique (Xylem elements only)
6. Demonstration: Preparation of double stained permanent slides.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Meristems – Characteristics of meristematic tissues
2-L2	Theories of meristems
3- L3	Types and functions of meristems
4-L4	Structure and functions of simple Tissue
5-L5	Structure and functions of parenchyma, collenchymas and sclerenchyma
6-L6	Structure and functions of Permanent tissue
7-L7	Structure and functions of xylem
8-L8	Structure and functions of phloem.
9-L9	UNIT II, Structure of dicot stem
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Structure of dicot root
12-L11	Structure of monocot stem
13-L12	Structure of monocot root
14-L13	Structure of dicot leaves.
15-L14	Structure of monocot leaves.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Explain the Secondary Thickening
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Secondary Thickening in dicot stem
21-P2	**College level meeting / Cell function**
22-L19	Explain the Secondary Thickening in dicot root
23-L20	Explain the process of secondary thickening
24-L21	Describe the concept of Cambium formation
25-L22	Analysis the role of secondary tissue formation
26-L23	Determine the functions of secondary tissue

27-L24	Explain the concept of anomalous Secondary growth
28-L25	Explain the anomalous Secondary growth in *Boerhaavia*
29-L26	Explain the anomalous Secondary growth in *Dracaena*
30-L27	UNIT IV, Explain what is Nodal anatomy
31-L28	To give an account on node and Types of node
32-L29	Unilocular node, Trilocular node, multilocular node, Leaf traces and Leaf gaps
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Epidermal Tissue system - Stomatal types, Epidermal Hair and Trichomes
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Working Principles of simple Microscope
39-L34	Working Principles of compound light Microscope
40-L35	Working Principles of Electron Microscope (TEM only)
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Micro Technique – Simple staining
44-L38	Micro Technique – Double staining
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Permanent slide
47-L41	Maceration
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Microscopy Techniques
50-L44	Recall the Micro Techniques (Simple staining, Double staining, Preparation of Permanent slide and Maceration
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To know the concept of Meristems and theories of meristem tissue
CO2	To know the type and function of simple and permanent tissue
CO3	To know the internal structure of moncot and dicot root stem and leaves
CO4	To know the normal and secondary thickening in dicot stem and

	root
CO5	To know the Nodal anatomy
CO6	To know the principles of Microscope.
CO7	To know the working nature of Light and Electron Microscope (TEM only)
CO8	To know types of staining techniques
CO9	To know the Maceration techniques
Experimental Learning	
EL1	To know the internal structure of meristems and simple tissue
EL2	Primary structure of stem, root and leaves of dicot and monocot plant.
EL3	Normal secondary thickening in dicot stem and root.
EL4	Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
EL5	Maceration technique (Xylem elements only) and Demonstration: Preparation of double stained permanent slides.
Integrated Activity	
IA1	Prepare model of Xylem elements
IA2	Preparation of double stained permanent slides for Dicot stem and root

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Algae and Bryophytes
Course Code	SMBO12
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Plant Diversity and Medicinal Botany
Course Code	SABO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Fungi, Plant Pathology and Lichenology
Course Code	SMBO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To recognize the General characteristic feature of Fungi
- To explain the classification of fungi
- To understand the economic importance of Fungi
- To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
- To understand the plant diseases
- To recognize the General characteristic feature of Lichen
- To explain the classification of Lichen
- To understand the economic importance of Lichen
- To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 3

FUNGI, PLANT PATHOLOGY AND LICHENOLOGY (4 hrs/week)

UNIT I **12Hrs**

General characters and classification of fungi based on Alexopoulous (1962). occurrence, systematic position, structure, reproduction and life cycle of Albugo and Mucor.

UNIT II **12Hrs**

Occurrence, systematic position, structure, reproduction and life cycle of Peziza and Puccinia. Economic importance of fungi: Role of fungi in medicine, industry, agriculture, food and food products.

UNIT III **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Tikka disease of groundnut, Red rot of sugarcane; Paddy blast.

UNIT IV **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Citrus canker, Bunchy top disease of Banana and Tobacco Mosaic viral disease.

UNIT V **12Hrs**

Lichens: General account, types and economic importance of Lichens. Structure and reproduction with special reference to *Usnea.*

PRACTICALS

1. Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.

2. Spotters:

i. Slides - *Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus and Teleutosorus

ii. Disease infected leaves showing Albugo and Puccinia; Usnea habit

iii. Observe and identify the following Plant diseases.

a. Tikka disease of Groundnut

b. Red Rot of Sugarcane

c. Paddy Blast

d. Citrus Canker

e. Bunchy Top of Banana

f. Tobacco Mosaic Viral disease

5. Maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I,** General characters of fungi
2-L2	Classification of fungi based on Alexopoulous (1962).
3- L3	occurrence, systematic position Albugo
4-L4	Structure Albugo
5-L5	Reproduction Albugo
6-L6	life cycle of Albugo
7-L7	occurrence,
8-L8	systematic position of Mucor.
9-L9	Structure of Mucor.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Reproduction of Mucor.
12-L11	life cycle of Mucor.
13-L12	**UNIT II** Occurrence, systematic position, structure, reproduction and life cycle of Peziza
14-L13	Occurrence, systematic position, structure, reproduction and life cycle of Puccinia.
15-L14	Economic importance of fungi
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	**UNIT III,** Introduction to plant diseases
	Entering Internal Test-I Marks into University portal
20-L18	Tikka disease of groundnut with special reference to the symptoms, etiology, dissemination and control measures.
21-P2	**College level meeting / Cell function**
22-L19	Red rot of sugarcane with special reference to the symptoms
23-L20	Red rot of sugarcane with special reference to etiology and dissemination
24-L21	Red rot of sugarcane with special reference to control measures:
25-L22	Paddy blast with special reference to the symptoms and etiology
26-L23	Dissemination and control measures of Paddy blast
27-L24	**UNIT IV** Citrus canker disease with special reference to the symptoms
28-L25	Citrus canker with special reference to etiology and dissemination
29-L26	Bunchy top disease of Banana with special reference to the symptoms
30-L27	Bunchy top disease of Banana with special reference to etiology and dissemination
31-L28	Tobacco Mosaic viral disease with special reference to the symptoms
32-L29	Tobacco Mosaic viral disease with special reference to etiology and dissemination
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	**UNIT V** Lichens: General account,
36-L32	**Allotting portion for Assignment/seminar**

37-IT-II	**Internal Test-II**
38-L33	Types of Lichen.
39-L34	Economic importance of Lichens
40-L35	Occurrence of *Usnea.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Systematic position of *Usnea.*
44-L38	Structure of *Usnea.*
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Reproduction of *Usnea.*
47-L41	Economic importance of *Usnea.*
48-L42	**Allotting portion for Internal Test-III**
49-L43	Economic importance of Lichen
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "**Fungi, Plant Pathology and Lichenology**"
CO1	To recognize the General characteristic feature of Fungi
CO2	To explain the classification of fungi
CO3	To understand the economic importance of Fungi
CO4	To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
CO5	To understand the plant diseases
CO6	To recognize the General characteristic feature of Lichen
CO7	To explain the classification of Lichen
CO8	To understand the economic importance of Lichen
CO9	To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen
Experimental Learning	
EL1	To know the Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.
EL2	*Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus

	and Teleutosorus.
EL3	Prepare the permanent slide
EL4	Preserve the plant Disease
Integrated Activity	
IA1	Prepare the permanent slide
IA2	Preserve the plant Disease

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Cell Biology & Embryology of Angiosperms
Course Code	SMBO 22
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of prokaryotic and eukaryotic cell
- To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
- Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
- Structure of Microsporoangium, Megasporogenesis
- To understand the Double fertilization process

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 4

CELL BIOLOGY & EMBRYOLOGY OF ANGIOSPERMS (4 hrs/week)

UNIT I Cell Biology: Structure of a Plant cell – prokaryotic and eukaryotic cell, structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.

UNIT II Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.

UNIT III Non-living inclusions - cystolith, raphides, starch grains. Cell Division: Mitosis and Meiosis.

UNIT IV Embryology : Structure of Microsporoangium, microsporogenesis, development of male gametophyte. Types and structure of megasporangium, Megasporogenesis, development of female gametophyte, Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type

UNIT V Double fertilization, types of endosperm – nuclear, cellular and helobial; Ruminate endosperm.Structure and Development of dicot embryo (Capsella) and Polyembryony.

PRACTICALS

Cell Biology

1. Mitosis using Onion roots.
2. Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
3. Non-living inclusions – Starch grains, Cystolith and Raphides.

Embryology of Angiosperms

1. Dissect out any one stage of embryo.
2. Identification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony
3. Specimen – Ruminate endosperm

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I** Introduction about Cell Biology
2-L2	Structure of a Plant cell
3- L3	Structure of prokaryotic and eukaryotic cell
4-L4	structure of cell wall
5-L5	Functions of cell wall
6-L6	Structure of plasma membrane
7-L7	Functions of plasma membrane
8-L8	Structure and Functions of endoplasmic reticulum
9-L9	Structure and Functions of ribosome.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II Structure of Mitochondria
12-L11	Functions of Mitochondria
13-L12	Structure and functions of Chloroplast
14-L13	Structure and functions of Nucleus
15-L14	Structure and functions of Chromosome.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Non-living inclusions Introduction
	Entering Internal Test-I Marks into University portal

20-L18	Cystolith
21-P2	**College level meeting / Cell function**
22-L19	Raphides
23-L20	Starch grains
24-L21	Cell Division Introduction
25-L22	Mitosis
26-L23	Meiosis. I
27-L24	Meiosis. II
28-L25	UNIT IV, Embryology Introduction
29-L26	Structure of Microsporoangium
30-L27	Microsporogenesis
31-L28	Development of male gametophyte
32-L29	Types and structure of megasporangium
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Development of female gametophyte
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type
39-L34	UNIT V, Double fertilization
40-L35	Types of endosperm
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Nuclear and Cellular endosperm
44-L38	Helobial endosperm
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Ruminate endosperm
47-L41	Development of dicot embryo
48-L42	**Allotting portion for Internal Test-III**
49-L43	Polyembryony.
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Cell Biology & Embryology of Angiosperms"
	To understand the concept of prokaryotic and eukaryotic cell
CO1	To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
CO2	Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
CO3	Structure of Microsporoangium, Megasporogenesis
CO4	To understand the Double fertilization process
Experimental Learning	
EL1	Mitosis using Onion roots.
EL2	Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
EL3	Non-living inclusions – Starch grains, Cystolith and Raphides.
EL4	dentification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony Ruminate endosperm
Integrated Activity	
IA1	Prepare of Nucleus
IA2	Fixing of Mitosis using Onion roots.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Embryology, Plant Anatomy, Physiology and Biotechnology
Course Code	SABO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Structure and development of microsporangium and megasporangium.
- To explain the concept of Double fertilization,
- To explain the Meristem - Structure and classification
- To know the function of simple and complex tissue
- To Explain the Photosynthesis
- To understand the process of Transpiration Absorption of water Ascent of sap
- To know the Tissue Culture – Scope and importance
- Mass culture of Nostoc and Yeast

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester-II / Allied –II

Semester II/IV

EMBRYOLOGY, PLANT ANATOMY, PHYSIOLOGY AND BIOTECHNOLOGY
4hrs/week

UNIT – I Structure and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.

UNIT – II Meristem - Structure and classification. Simple tissues, complex tissues; Primary structure of Dicot and Monocot stem and root; Structure of leaf; Normal secondary thickening in dicot stem.

UNIT – III Absorption of water – diffusion, osmosis, imbibition, mechanism of absorption of water; Ascent of sap – (cohesion theory only); Transpiration – Types, Mechanism of stomatal transpiration (Starch – sugar hypothesis); Photosynthesis importance of photosynthesis, Mechanism of Photosynthesis – Light and dark reaction (Calvin cycle).

UNIT – IV Nostoc - Morphology, Use as Biofertilizerand Mass cultivation; Structure,multiplication (budding and fission) and Mass culture of Yeast.

UNIT – V Tissue Culture – Scope and importance - totipotency, Nutrient media(M.S medium) Callus and Meristem Culture; Applications of plant tissue culture.

PRACTICAL – 2

1) Dissect out young embryo from Tridax flower bud.

2) Make suitable micro-preparations of dicot and monocot stem, root

3) Demonstrate the physiology experimental set up –Potato osmoscope, Ganong's light screen, Bell jar experiment

4)) Identify the Photograph/ Slide/ Specimen/setup

(i) Nostoc

(ii) Yeast

(iii) Callus culture,

(iv) Meristem culture.

6) Maintain a record note book for external and internal evaluation

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Structure of microsporangium and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.
2-L2	Development of microsporangium
3- L3	Structure and types of megasporangium
4-L4	development of megasporangium
5-L5	Development of male gametophyte

6-L6	Development of female gametophyte
7-L7	Double fertilization
8-L8	Endosperm – types.
9-L9	Structure of dicot embryo.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II II Meristem - Structure and classification
12-L11	Simple tissues, complex tissues
13-L12	Monocot stem and root
14-L13	Dicot stem and root
15-L14	Normal secondary thickening in dicot stem.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Absorption of water – diffusion
	Entering Internal Test-I Marks into University portal
20-L18	Osmosis and imbibition
21-P2	**College level meeting / Cell function**
22-L19	mechanism of absorption of water; Ascent of sap – (cohesion theory only)
23-L20	Transpiration – Types
24-L21	Mechanism of stomatal transpiration (Starch – sugar hypothesis);
25-L22	Importance of photosynthesis
26-L23	Mechanism of Photosynthesis
27-L24	Light and dark reaction (Calvin cycle).
28-L25	Light and dark reaction (Calvin cycle).
29-L26	Light and dark reaction (Calvin cycle).
30-L27	**UNIT IV** Nostoc - Morphology,
31-L28	Use as Biofertilizer
32-L29	Structure and multiplication (budding and fission) of Yeast
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Mass culture of Yeast.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Tissue Culture Introduction
39-L34	Tissue Culture – Scope
40-L35	Tissue Culture –importance
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Totipotency
44-L38	Nutrient media(M.S medium)
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Callus Culture
47-L41	Meristem Culture
48-L42	**Allotting portion for Internal Test-III**
49-L43	Applications of plant tissue culture.
50-L44	Applications of plant tissue culture.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Embryology, Plant Anatomy, Physiology and Biotechnology"
CO1	To understand the Structure and development of microsporangium and megasporangium.
CO2	To explain the concept of Double fertilization,
CO3	To explain the Meristem - Structure and classification
CO4	To know the function of simple and complex tissue
CO5	To Explain the Photosynthesis
CO6	To understand the process of Transpiration Absorption of water Ascent of sap
CO7	To know the Tissue Culture – Scope and importance
CO8	Mass culture of Nostoc and Yeast
Experimental Learning	
EL1	Make suitable micro-preparations of dicot and monocot stem
EL2	Demonstrate the physiology experimental set up –Potato osmoscope
EL3	Ganong's light screen, Bell jar experiment
EL4	(i) Nostoc (ii) Yeast (iii) Callus culture, (iv) Meristem culture.
Integrated Activity	
IA1	Preserve the permanent slide for Mocot , dicot stem and root
IA2	Preparation of mass culture of Yeast and Nostoc

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Organic Farming
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mr. V.K Stanley Raja 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the soil Profile
- To discuss the Organic Matter
- To explain the Soil Air and water
- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
- To explain the Green Manure: Plant wastes
- To explain the Biofertilizers
- Explain the Vermicomposting:

MSU/2017-18/ B. Sc Botany / Semester –III
Skill Based Subject -I (B) ORGANIC FARMING (4hrs/week)

Unit –I **(11hr)**
Soil Science: Brief Account of Soil Profile, Fertility of Soil – Importance of Organic Matter – Water Retentivity and Aeration of Soil.

Unit – II: **(12hr)**
Manure and Manuring: Organic Manure, Types, Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.

Unit – III **(10 hr)**
Green Manure: Plant wastes – Fallen leaves and Twigs, Humus Formation, Green Manuring, Mulching - Leaves of Trees like Pongamia, Gliricidia ,Azadirachta,andCalotropis, Compost making.

Unit-IV **(13hr)**

Biofertilizers: Rhizobium-Importance, Mass Production and Application, VAM Fungi – Importance, Mass production and Applications.

Unit–V **(14hr)**

Vermicomposting: Importance, Application and Production of Vermicompost, Preparation and importance of Panchagavyaas foliar spray

PRACTICALS:

5. To make suitable micro preparations of the following: Lycopodium Stem,
   Adiantum Stipe,
   Marsilea Petiole,
   Rhizome and Sporo carp.
   Pinus Stem and Needle,
   Gnetum Stem and Leaf.
6. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

   Paleobotany (Slide):
   Rhynia stem
   Lepidodendron stem
   Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Soil Science: Introduction
2-L2	Brief Account of Soil Profile
3- L3	Fertility of Soil
4-L4	Importance of Organic Matter
5-L5	Water Retentivity
6-L6	Aeration of Soil.
7-L7	UNIT II Manure and Manuring: Introduction, , Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
8-L8	Organic Manure
9-L9	Organic Manure Types
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Animal Wastes – Cattle Dung and Urine
12-L11	Poultry Wastes
13-L12	Slaughter Wastes
14-L13	Piggery Wastes
15-L14	Fishery Wastes
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**

18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III Green Manure: Plant wastes
	Entering Internal Test-I Marks into University portal
20-L18	Plant wastes – Fallen leaves and Twigs
21-P2	**College level meeting / Cell function**
22-L19	Humus Formation
23-L20	Green Manuring
24-L21	Mulching - Leaves of Trees like Pongamia
25-L22	Mulching - Leaves of Trees like Gliricidia
26-L23	Azadirachta
27-L24	Calotropis
28-L25	Compost making
29-L26	Biofertilizers: Rhizobium-Importance
30-L27	Mass production of VAM
31-L28	Mass production of VAM
32-L29	Applications of VAM
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Vermicomposting:
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Importance of Vermicomposting
39-L34	Vermiculture
40-L35	Production of Vermicompost Indoor
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Production of Vermicompost Out door
44-L38	Preparation of Panchagavyaas
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Panchagavyaas
47-L41	Application of Panchagavyaas
48-L42	**Allotting portion for Internal Test-III**
49-L43	Dosage of Panchagavyaas
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the soil Profile
CO2	➢ To discuss the Organic Matter
CO3	➢ To explain the Soil Air and water
CO4	➢ To Discuss the Stelar Evolution in Pteridophytes.
CO5	➢ To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
CO6	➢ To explain the Green Manure: Plant wastes
CO7	➢ To explain the Biofertilizers
CO8	➢ Explain the Vermicomposting:

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	SMBO 31
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the general character of Pteridophytes
- To discuss the classification of Pteridophytes
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea

- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character of Gymnosperms
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
- Economic importance of Gymnosperms
- Explain the Geological Time Scale

MSU/2017-2018/B.Sc. Botany/Semester-III/Core Paper – 5

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY (4hrs/week)

UNIIT I **(12L)**

Pteridophytes: General Characteristics and Classification of Pteridophytes (Sporne 1966), Psilotum and Lycopodium: Distribution, Systematic Position, Structure, Reproduction and Life History (need not study the development of gametophyte, sex organs and sporophyte).

UNIT II **(11L)**

Adiantum, Marsilea: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle (need not study the development of gametophytes, sex organ and sporophyte), Stelar Evolution in Pteridophytes.

UNIT III **(13L)**

Gymnosperms: General Characteristics and Classification of Gymnosperms (David Bierhorst, 1971), Pinus: Distribution, Systematic Position, Structure, Reproduction and Life History

UNIT IV **(14L)**

Gnetum: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of (need not study the Development of Sex Organs and Sporophyte). Economic Importance of Gymnosperms.

UNIT V **(10L)**

Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.

PRACTICALS:

7. To make suitable micro preparations of the following: Lycopodium Stem,
   Adiantum Stipe,
   Marsilea Petiole,
   Rhizome and Sporo carp.
   Pinus Stem and Needle,
   Gnetum Stem and Leaf.
8. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

   Paleobotany (Slide):
   Rhynia stem
   Lepidodendron stem
   Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Pteridophytes: General Characteristics
2-L2	Classification of Pteridophytes (Sporne 1966)
3- L3	Distribution, Systematic Position of Lycopodium
4-L4	Structure of Lycopodium
5-L5	Reproduction and Life History of Lycopodium
6-L6	Unit II Occurrence of Adiantum
7-L7	Distribution, Systematic Position of Adiantum
8-L8	Structure of Adiantum

9-L9	Reproduction and Life History of Adiantum
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Occurrence of Marsilea
12-L11	Distribution, Systematic Position of Marsilea
13-L12	Structure of Marsilea
14-L13	Reproduction and Life History of Marsilea
15-L14	Unit III Gymnosperms: General Characteristics
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Classification of Gymnosperms
	Entering Internal Test-I Marks into University portal
20-L18	Distribution, Systematic Position of Pinus
21-P2	**College level meeting / Cell function**
22-L19	Structure of Pinus
23-L20	Reproduction of Pinus
24-L21	Reproduction of Pinus
25-L22	Life History of Pinus
26-L23	UNIT IV Gnetum: Occurrence
27-L24	Systematic Position of Gnetum
28-L25	Structure of Gnetum
29-L26	Reproduction of Gnetum
30-L27	Life Cycle of of Gnetum
31-L28	Economic Importance of Gymnosperms
32-L29	Revision of IV Unit
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Geological Time Scale
39-L34	Methods of Fossilization
40-L35	Methods of Fossilization
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Brief Study of Rhynia
44-L38	Brief Study of Rhynia
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Brief Study of Lepidodendron
47-L41	Brief Study of Lepidodendron
48-L42	**Allotting portion for Internal Test-III**
49-L43	Brief Study of Lyginopteris.
50-L44	Brief Study of Lyginopteris.
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**

54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To understand the general character of Pteridophytes
CO2	To discuss the classification of Pteridophytes
CO3	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea
CO4	To Discuss the Stelar Evolution in Pteridophytes.
CO5	To understand the general character of Gymnosperms
CO6	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
CO7	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
CO8	Economic importance of Gymnosperms
CO9	Explain the Geological Time Scale
Experimental Learning	
EL1	micro preparations of the following: Lycopodium Stem, Adiantum Stipe, Marsilea Petiole, Rhizome and Sporo carp. Pinus Stem and Needle,
EL2	To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.
EL3	Paleobotany (Slide): Rhynia stem Lepidodendron stem Lyginopteris stem.
Integrated Activity	
IA1	Prepare Permanent Slide for Pinus
IA2	Prepare Permanent Slide Marsilea

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature

Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Microbiology and Techniques In Biology
Course Code	SMBO41
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. V.K. Stanley Raja 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Microbiology
- To discuss the Five Kingdom Classification
- To explain the Gram Staining
- To describe the Virus and Bacteriophage
- To illustrate the Bacterio flora in Milk
- To describe the principles of Microscope.
- To describe the working nature of UV Spectrometer, MRI, ECG

MSU/2017-18/ B. Sc Botany/ Semester –IV /Core paper-6

MICROBIOLOGY AND TECHNIQUES IN BIOLOGY (4hrs/week)

UNIIT I (13L)

Microbiology: Brief History and Development, Classification of Microorganisms (Whittaker‟s Five Kingdom Concept), Bacteria - Outline of Classification (Bergey‟smanual), Ultra Structure, Nutritional Types and Reproduction of Bacteria, Media Preparation and Pure Culture techniques of Bacteria, Staining Technique - Gram Staining.

UNIT II (12L)

Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.

UNIT III (12L)

Microbes: Microbes in Food Production, Spoilage, Poisoning and Preservation. Bacteria Flora in Milk, Pasteurization of Milk and Milk Products, Bacterial Pathogens and Water Pollution, Drinking Water as a Vehicle of Diseases, Purification of water.

UNIT IV (11L)

Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.

UNIT V (12L)

Electrophoresis: Basic principles, electrophoretic mobility, factors, isoelectric focusing. Types- vertical and horizontal agarose and poly acrylamide gel electrophoresis, detection and recovery of electrophorogram. Gel documentation system. X-ray crystallography.

PRACTICALS

1. Preparation of Culture Media for Bacteria.

2. Preparation of Serial Dilution.

3. Isolation of Bacteria – Streak Plate Method

4. Identify the type of Bacteria using Gram Staining.

5. Analysis of Milk – Methylene Blue Dye Reduction Test.

6. Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Microbiology: Brief History
2-L2	Development of Microbiology
3- L3	Classification of Microorganisms (Whittaker‟s Five Kingdom Concept)
4-L4	Bacteria - Outline of Classification
5-L5	Bacteria - Outline of Classification
6-L6	Ultra Structure of Bacteria
7-L7	Nutritional Types of Bacteria
8-L8	Reproduction of Bacteria
9-L9	Media Preparation and Pure Culture techniques of Bacteria,
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Staining Technique - Gram Staining.

12-L11	UNIT II Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.
13-L12	Structure of HIV
14-L13	Reproduction of HIV
15-L14	T4 Bacteriophages, Viroids, Virions and Mycoplasma
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Transmission of Viruses and Purification of Viruses.
	Entering Internal Test-I Marks into University portal
20-L18	UNIT III
21-P2	**College level meeting / Cell function**
22-L19	Microbes: Microbes in Food Production
23-L20	Spoilage,
24-L21	Poisoning
25-L22	Preservation
26-L23	Bacteria Flora in Milk
27-L24	Pasteurization of Milk and Milk Products
28-L25	Bacterial Pathogens
29-L26	Water Pollution, Drinking Water as a Vehicle of Diseases
30-L27	Purification of water.
31-L28	UNIT IV, Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.
32-L29	Instruments: Principles, Working Mechanism and Applications of UV Spectrometer
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Instruments: Principles, Working Mechanism and Applications of Centrifuge
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Instruments: Principles, Working Mechanism and Applications of ECG
39-L34	Instruments: Principles, Working Mechanism and Applications of MRI
40-L35	Instruments: Principles, Working Mechanism and Applications of Positron emission tomography.
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Electrophoresis: Basic principles,
44-L38	electrophoretic isoelectric focusing
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Types- vertical and horizontal agarose
47-L41	Acrylamide gel electrophoresis
48-L42	**Allotting portion for Internal Test-III**
49-L43	Detection and recovery of electrophorogram.
50-L44	X-ray crystallography.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the concept of Microbiology
CO2	➢ To discuss the Five Kingdom Classification
CO3	➢ To explain the Gram Staining
CO4	➢ To describe the Virus and Bacteriophage
CO5	➢ To illustrate the Bacterio flora in Milk
CO6	➢ To describe the principles of Microscope.
CO7	➢ To describe the working nature of UV Spectrometer, MRI, ECG
Experimental Learning	
EL1	Preparation of Culture Media for Bacteria.
EL2	2. Preparation of Serial Dilution.
EL3	3. Isolation of Bacteria – Streak Plate Method
EL4	4. Identify the type of Bacteria using Gram Staining.
EL5	5. Analysis of Milk – Methylene Blue Dye Reduction Test.
	Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.
Integrated Activity	
IA1	Prepare the gram Staining for the given Bacterial Culture
IA2	Isolation of Bacteria – Streak Plate Method

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Preservation of fruits and vegetables
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. S.Darwin 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
- To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
- To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
- To describe the Sauce, Pickles & Ketchup
- To illustrate the Canning of Fruits& Vegetables

MSU/2017-18/ B. Sc Botany / Semester –III Skill Based Subject -I (A)
PRESERVATION OF FRUITS AND VEGETABLES (4hrs/week)

Unit-I (11L)

Fruits and Vegetables: Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.

Unit-II (13L)

Principles of Preservation: Importance and Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.

Unit-III (13L)

Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.

Unit- IV (11 L)

Preparation of Chutney, Sauce, Pickles & Ketchup: Preparation of Chutney- Mango, Sauce – Tomato,Pickles- Lime, Mango and Garlic, KetchupTomato. Drying of fruits: Banana, Mango, Grapes and Fig.

Unit- V (12 L)

Canning of Fruits& Vegetables: Mango and Banana; Tomato, Carrot, Bean and Mushrooms.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	Fruits and Vegetables: Nutritive values
2-L2	factors affecting storage of Fruits
3- L3	factors affecting storage of Vegetables
4-L4	Spoilage of fruits - microbial, enzymatic and insects.
5-L5	Spoilage of vegetables - microbial, enzymatic and insects.
6-L6	Unit II Principles of Preservation
7-L7	Importance of Preservation
8-L8	Methods of Preservation
9-L9	Refrigeration
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Freezing
12-L11	Canning,
13-L12	Drying
14-L13	Dehydration
15-L14	Chemical preservatives.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis**-
19-L17	UNIT III Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
	Entering Internal Test-I Marks into University portal
20-L18	Methods of preparation of Fruit Juice- Orange,
21-P2	**College level meeting / Cell function**
22-L19	Squashes- grape
23-L20	Squashes- Pine apple
24-L21	Jam - Tomato
25-L22	Jam - Mixed Fruit
26-L23	Jellies- Guava
27-L24	UNIT Preparation of Chutney.
28-L25	Drying of fruits

29-L26	Sauce
30-L27	Pickles
31-L28	Ketchup
32-L29	Preparation of Chutney- Mango
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Pickles- Lime
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Pickles Mango
39-L34	Pickles Garlic
40-L35	Drying of fruits
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Drying of fruits: Banana
44-L38	Drying of fruits: Mango
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Drying of fruits: Grapes
47-L41	Drying of fig
48-L42	**Allotting portion for Internal Test-III**
49-L43	Clarifying the doubts in the Syllabus
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
CO2	➢ To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
CO3	➢ To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit ,

	Jellies- Guava.
CO4	➢ To describe the Sauce, Pickles & Ketchup
CO5	➢ To illustrate the Canning of Fruits& Vegetables

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

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Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Biotechnology and Genetic Engineering
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. D. Abiya Chelliah
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the principle of Tissue Culture Laboratory
- To know the Meristem Culture and Artificial Seed.
- Basic knowledge about Techniques of genetic engineering
- To know about Identification of Recombinants
- To explain the concept of DNA transfer techniques.

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 1A

BIOTECHNOLOGY AND GENETIC ENGINEERING (5hrs/week)

UNIT1 (15L)

Tissue Culture: Introduction, definition, history, scope and importance of plant tissue culture, Totipotency of cells, Tissue culture laboratory- organization and requirements, Sterilization techniques, Nutrient media- composition and preparation.

UNIT 11 (14L)

Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Protoplast isolation, fusion, selection of hybrids and regeneration.Cybrids– production and applications, Artificial seed: production, advantages and disadvantages.

UNIT 111 (16L)

Techniques of genetic engineering: Isolation of specific genes, enzymes used in gene cloning, Cloning Vectors - Plasmids,Cosmids and Phagemids,cDNALibraries,Agrobacterium mediated gene transfer in plants,GM plants – BtBrinjal, Bt Cotton, Golden rice. Bioethical issues.

UNIT 1V (16L)

Identification of Recombinants: Insertional inactivation, Immunochemical Method and Colony Hybridization Technique.Selection of Recombinant using Selective Medium and reporter genes, Blotting Techniques – Southern, Northern and Western Blotting.

UNIT V (14L)

Mutagenesis& DNA transfer techniques: Site directed mutagenesis and random mutagenesis; DNA transfer techniques: Physical method Microinjection, Chemical method-Calcium phosphate method, Electrical method Electroporation, Natural-Conjugation and bacterial transformation.

Spotters/Photographs

i. Callus culture from Carrot Explant.

ii. Protoplast Isolation. ‘iii. Plasmids – Ti plasmids iv. Gene cloning in E. Coli. v. Agrobacterium mediated gene transfer. vi. Blotting Techniques.

vii. Colony Hybridization technique. viii. Transgenic Plants prescribed in the syllabus. To maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Tissue Culture: Introduction,
2-L2	Definition of Tissue Culture
3- L3	history, scope and importance of plant tissue culture
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Totipotency of cells
8- L1	Tissue culture laboratory- organization
9- L8	Tissue culture laboratory requirements
10- L9	Sterilization techniques
11-L10	.Protoplast Isolation
12-P11	Protoplast Isolation
13-P12	Protoplast Isolation
14-P13	Practical
15-L14	Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Artificial seed: production, advantages and disadvantages.
16-L15	Protoplast isolation, fusion, selection of hybrids and regeneration.
17- L16	Cybrids– production and applications,
18-L17	Artificial seed: production
19- P18	Plasmids – Ti plasmids
20- P19	Plasmids – Ti plasmids
21-P20	Plasmids – Ti plasmids
	Internal Test I begins
22- L21	Artificial seed: production, advantages and disadvantages
23- IT-1	**Internal Test-I**
24- L22	Artificial seed: production, advantages and disadvantages
25- L23	Classification of amino acids.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Techniques of genetic engineering:
28- L26	enzymes used in gene cloning
29- P27	Gene cloning in E. Coli.
30- P2	Gene cloning in E. Coli.
31-P28	Gene cloning in E. Coli.
32-L29	Cloning Vectors - Plasmids

33-L30	Cosmids and Phagemids
34- L31	cDNALibraries
35- L32	Agrobacterium mediated gene transfer in plants
36- L33	GM plants – Bt Brinjal, Bt Cotton, Golden rice. Bioethical issues.
37- P34	Agrobacterium mediated gene transfer. vi. Blotting Techniques
38-P35	Agrobacterium mediated gene transfer. vi. Blotting Techniques
39- P36	Agrobacterium mediated gene transfer. vi. Blotting Techniques
40- L37	Golden rice.
41- L38	Golden rice.
42-P3	Bioethical issues.
43- L39	Bioethical issues.
44- P40	Identification of Recombinants: Insertional inactivation, Blotting Techniques – Southern, Northern and Western Blotting.
45- P41	Immunochemical Method and Colony Hybridization Technique
46- P42	Selection of Recombinant using Selective Medium and reporter genes
47- L43	Blotting Techniques – Southern
	Internal Test II begins
48- L44	Blotting Techniques –Northern and Western Blotting
49-IT-II	**Internal Test-II**
50-L45	Blotting Techniques Western Blotting
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Mutagenesis& DNA transfer techniques: Natural-Conjugation and bacterial transformation.
53- P48	Site directed mutagenesis and random mutagenesis;
54- P49	Site directed mutagenesis and random mutagenesis;
55- P50	DNA transfer techniques: Physical method Microinjection
56- L51	Practical
57- L52	Bioenergetics of Chloroplast
58- L53	Mitochondria,
59-P4	**College level meeting/ function**
60- L54	Chemical method-Calcium phosphate method
61- L55	Electrical method Electroporation,
62- L56	Natural-Conjugation and bacterial transformation
63- L57	Natural-Conjugation and bacterial transformation
64- L58	Natural-Conjugation and bacterial transformation
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper**

	discussion
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	➢ To know the principle of Tissue Culture Laboratory
CO2	➢ To know the Meristem Culture and Artificial Seed.
CO3	➢ Basic knowledge about Techniques of genetic engineering
CO4	➢ To know about Identification of Recombinants
CO5	➢ To explain the concept of DNA transfer techniques.
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Horticulture and plant Breeding
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Mr. V.K Stanley Raja
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the Scope, importance and divisions of Horticulture
- To know the : Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components
- Basic knowledge Kitchen garden: Establishment, Organic manures and growth regulators in horticulture,
- To know about Plant Breeding Nature, Scope and Objectives
- To explain the concept of Mutation breeding: Procedure and practices, Mutagens

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 2A

HORTICULTURE & PLANT BREEDING (5hrs/week)

UNIT - I (14L)

Horticulture: Scope, importance and divisions, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.

UNIT - II (16L) Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets, water garden, terrarium, topiary and Bonsai.

UNIT - III (15L) Kitchen garden: Establishment, Organic manures and growth regulators in horticulture, Plant protection measures for horticulture, Seed Propagation methods, Preparation of Nursery beds, Transplantation – steps and Methods.

UNIT - IV (16L) Plant Breeding Nature, Scope and Objectives, Plant introduction, selection methods (pure line and mass), Hybridization techniques, Heterosis breeding, Interspecific and intergeneric hybridization.

UNIT – V (14L) Mutation breeding: Procedure and practices, Mutagens, Polyploidy breeding and its applications.Breeding for disease resistance.

PRACTICALS

Demonstration

i. Vegetative methods of propagation.

a. Cutting-Stem and Leaf cutting

b. Layering-Simple and air layering.

c. Grafting – Tongue grafting.

d. Budding – T-budding.

ii. Garden components -Rockery, hanging baskets, terrarium and topiary.

iii. Garden implements-spade, water can, pruning scissors, digging fork

iv. Designing Kitchen Garden.

v. Plant Breeding: Emasculation and Bagging methods

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin
1-L1	Horticulture: Scope, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.
2-L2	Horticulture: importance
3- L3	Horticulture: divisions
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Vegetative propagation methods- cutting,
8- L1	Vegetative propagation methods layering,
9- L8	Vegetative propagation methods- budding,
10- L9	Vegetative propagation methods- grafting
11-L10	. Vegetative propagation methods- vegetative propagules
12-P11	Unit 11 Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets,
13-P12	Formal Gardening
14-P13	Informal Gardening
15-L14	Design and Establishment of Garden
16-L15	Garden components
17- L16	garden implements
18-L17	lawn making
19- P18	glass house
20- P19	rockery
21-P20	hanging baskets
	Internal Test I begins
22- L21	water garden, terrarium, topiary and Bonsai.
23- IT-1	**Internal Test-I**
24- L22	Kitchen garden: Establishment,
25- L23	Organic manures and growth regulators in horticulture
26- L24	**Test Paper distribution and result analysis**

	Entering Internal Test-I Marks into University portal
27- L25	Plant protection measures for horticulture,
28- L26	Seed Propagation methods
29- P27	Preparation of Nursery beds
30- P2	Transplantation – steps
31-P28	Methods of Transplantation
32-L29	Plant Breeding Nature,.
33-L30	Scope and Objectives,
34- L31	Plant introduction, selection methods (pure line and mass),
35- L32	Hybridization techniques, Heterosis breeding
36- L33	, Interspecific
37- P34	Intergeneric hybridization
38-P35	Mutation breeding:
39- P36	Procedure and practices of
40- L37	Mutagens, Polyploidy breeding
41- L38	and its applications.Breeding for disease resistance.
42-P3	a. Cutting-Stem and Leaf cutting
43- L39	b. Layering-Simple and air layering.
44- P40	c. Grafting – Tongue grafting.
45- P41	d. Budding – T-budding.
46- P42	Garden components -Rockery,
47- L43	Garden components - hanging baskets
	Internal Test II begins
48- L44	terrarium and topiary.
49-IT-II	**Internal Test-II**
50-L45	Garden implements-spade,
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	ii. hanging baskets,
53- P48	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
54- P49	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
55- P50	Plant Breeding: Emasculation and Bagging methods
56- L51	Plant Breeding: Emasculation and Bagging methods
57- L52	
58- L53	
59-P4	**College level meeting/ function**
60- L54	Garden components
61- L55	iii. Garden implements
62- L56	
63- L57	
64- L58	
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical

69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	To know the Scope, importance and divisions of Horticulture
CO2	To know the : Types of gardens – Formal
CO3	Basic knowledge Kitchen garden: Establishment
CO4	To know about Plant Breeding Nature
CO5	To explain the concept of Mutation breeding: Procedure and practices
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Morphology and Taxonomy of Angiosperms
Course Code	JMPB51
Class	III year (2018-2019)
Semester	Odd
Staff Name	Dr. M. Amutha
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the morphology of the plant parts.
- To know the structure of various types of inflorescences, floral parts, and fruits.
- Basic knowledge about taxonomy and classification of angiosperm plants.
- To study about binomial nomenclature.
- To know about angiosperm families.
- To study the preparation of dichotomous key.
- To know about the useful plant parts and their uses.

Syllabus

UNIT 1 Morphology_ Modification of Root, Stem and Leaf. Leaf - Simple, Compound; Phyllotaxy; Inflorescence – Types; Flower- Floral parts; Fruits- Types.

UNIT 11 Principles of taxonomic Hierarchy (Order, Family, Genus and Species Level). Systems of classification (with merits and demerits) – Natural – Benthem aqnd Hooker system, Phylogenetic – Engler and Prantl System; Binomial nomenclature – ICBN, Dichotomous key, Preparation, Maintenance and significance of Herbarium.

UNIT 111 Critical study of the following Families and their Economic importance: Annonaceae, Sterculiaceae, Rutaceae, Caesalpiniaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Sapotaceae.

UNIT IV Convolvulaceae, Asclepiadaceae, Apocynaceae, Lamiaceae, Euphorbiaceae, Amaranthaceae, Liliaceae, Cannaceae and Poaceae.

UNIT V Binomial, Family, Useful part and Uses of the Following Plant Products: Fibres- Jute, Cotton and Hemp; Timber- Teak, Rosewood and Neem; Resin – Camphor and Canada balsam; Cosmeticsb- *Aloe*, Sandal wood Turmeric; Beverages – Tea, Coffee and *Cocoa*; Oil – Coconut oil, Eucalyptus oil and *Pongamia* oil; Fruits and Vegetables- Banana, Jackfruit, Pineapple; Medicinal plants – *Adatoda*, Clove and *Acorus calamus*

PRACTICALS:

1. Morphological identification of plant parts and their modifications.

2. Technical description of plant parts and dissection of floral parts of plants with reference to the families prescribed in the syllabus.

3. Field trips (minimum 2 days) to places under the guidance of teachers to study plants in their natural habitat and submit a report.

4. Preparation of dichotomous key.

5. Identify and comment on the useful plant parts or plants prescribed in the syllabus.

6. Preparation and submission of 10 herbarium sheets.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of morphology
2-L2	Brief account on root modification,
3- L3	Stem and Leaf modification.
4-P4	Practical
5-P5	Practical – Morphology modifications.
6-P6	Practical
7-L7	Brief account about phyllotaxy.
8- L1	Inflorescence.
9- L8	Fruits – Types.
10- L9	Taxanomical Hierarchy.
11-L10	Brief study about Natural classification.
12-P11	Practical

13-P12	Practical – Dissectout Annonaceae, Sterculiaceae.
14-P13	Practical
15-L14	Phylogenetic system of Classification.
16-L15	ICBN
17- L16	Dichotomous key preparation.
18-L17	Preparation steps of Herbarium
19- P18	Practical
20- P19	Practical – Dissectout Rutaceae and Caesalpiniaceae.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Annonaceae
25- L23	Sterculiaceae
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Cucurbitaceae
28- L26	Apiaceae
29- P27	Practical
30- P2	Practical – C Apiaceae, Covolvulaceae
31-P28	Practical
32-L29	Caesalpiniaceae
33-L30	Sapotaceae
34- L31	Rubiaceae
35- L32	Convolvulaceae
36- L33	Asclepiadaceae
37- P34	Practical
38-P35	Practical – Rubiaceae, Sapotaceae , Apocynaceae
39- P36	Practical
40- L37	Lamiaceae
41- L38	Euphorbiaceae
42-P3	Amaranthaceae
43- L39	Cannaceae
44- P40	Practical
45- P41	Practical – Euphorbiaceae, Asclepiadaceae
46- P42	Practical
47- L43	Liliaceae
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Uses of Fibres.
53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Lamiaceae, Cannaceae, Poaceae
56- L51	Practical

57- L52	Timber
58- L53	Resin
59-P4	**College level meeting/ function**
60- L54	Cosmatics
61- L55	Beverages
62- L56	Oil
63- L57	Fruits and vegetables
64- L58	Medicinal plants
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Amaranthaceae, Cannaceae, Liliaceae
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about angiospermic plants.
CO2	Know about angiospermic plants
CO3	Know about the different dicot and monocot plants.
CO4	To learn about different floral parts.
CO5	To know about different economic importance of plants.
CO6	To know about uses of various oils, timbers, bevarages etc.
CO7	To know about uses of medicinal plants.
CO8	To know about classification of plants.
CO9	To know about herbarium preparation.
Experimental Learning	
EL1	Know about dichotomous key preparation.
EL2	Know about how to idendify the dicot and monocot plants.
EL3	Know about taxonomical hierarchy.
EL4	Know about differentiation of floral parts.
Integrated Activity	
IA1	To visit different fields to study the plants in their natural habitat.
IA2	To attended two days study tour about Taaxonomy.

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

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St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Plant Physiology
Course Code	GMPB61
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. Mr. D. Abiya Chelliah
Credits	6
L. Hours /P. Hours	6 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the physiology of the plans.

- To know the structure of various types of stomata, chloroplast, and phytohormons .
- Basic knowledge about physiology and classification of macro nutrients and micronutrients.
- To study about C3, C4 and CAM pathways.
- To know about translocation of organic solutes.
- To study the transpiration pull and cohesion theory.
- To know about various phytohormones and their uses.

Syllabus

UNIT I

WaterRelationsof Plants&Transpiration: Water Relations: Imbibition, Diffusion and Osmosis; Water Potential- Definition, Components, Absorption of Water – Mechanism and Factors affecting Water Absorption; TranspirationDefinition, Types, Significance and Mechanism of Stomatal Transpiration- steps and theories, Guttation

UNIT II

Ascent of Sap&Mineral nutrition: Ascent of Sap –Definition, Path of Ascent of Sap, Mechanism- Transpiration Pull and Cohesion Theory.Mineral nutrition - Macro and Micro Nutrients-Absorption of Mineral Salts – Mechanism, Translocation of Organic Solutes - Mechanism of Phloem Transport (Munch‟s Mass flow hypothesis).

UNIT III

Photosynthesis&.Respiration: Photosynthesis:Light and Dark Reactions - Photosynthetic Electron Transport Chain and Photophosphorylation (Cylic and Non cyclic); Carbon Assimilation - C3, C4 and CAM Pathways andits Significance;Respiration: Glycolysis, TCA cycle and Oxidative Phosphorylation.

UNIT IV

Growth and Development: Growth Curve and phases of growth;Phytohormones:Physiological Effect and Practical Applications - Auxin, Gibberellic acid, Cytokinin, Ethylene and Abscisicacid;Photoperiodism and Vernalization.

UNIT V

Seed Dormancy: Causes and Methods ofBreaking Dormancy; Stress Physiology - Classification– Bioticand Abiotic, Stress Factors- Response of Plants to Salt, Drought, Frost and Heat

PRACTICALS

1. Water Potential by Gravimetric Method.

2. Water Potential by Falling Drop Method.

3. Osmotic Potential by Plasmolytic Method.

4. Rate of Photosynthesis in Different Concentrations of Bi-Carbonate – Bubble Method.

5. Measurement of Stomatal Index.

6. Effect of Temperature on Permeability of Plasma Membrane.

7. Separation of Chlorophyll Pigments by Ascending Paper Chromatography.

DEMONSTRATION: 1. Tissue Tension

2. Suction due to Transpiration

3. Ganong‟ sPhotometer

4. Fermentation

5. Arc Auxanometer

6. Clinostat

7. Phototropism

Spotters

1. Absorption Spectrum of Chlorophylls

2. Growth curve. To maintain a record note book.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of Imbibition
2-L2	Brief account on Diffusion,
3- L3	Osmosis , Water Potential and Water Absorption.
4-P4	Practical
5-P5	Practical – Water Potential by Gravimetric method
6-P6	Practical
7-L7	Brief account on Transpiration
8- L1	Mchanism of Stomatal Traspiration
9- L8	Significance of Transpiration.

10- L9	Ascent of sap
11-L10	Brief study about Path of Ascent of sap.
12-P11	Practical
13-P12	Practical – Water Potential by Falling Drop Method.
14-P13	Practical
15-L14	Study about Transpiration Pull Cohesion Thory.
16-L15	Mineral Nutrition
17- L16	Various types of Macronutrients.
18-L17	Different types of micronutruients.
19- P18	Practical
20- P19	Practical – Osmotic Potential by Plasmolytic Method.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Absorption of Mineral Salts.
25- L23	Study about Translocaton of Organic solutes.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Mechanism of Phloem Transport.
28- L26	Study about Light and Dark Reactions.
29- P27	Practical
30- P2	Practical – Quantitative Estimation of Total Chloophyll Content in Leaves.
31-P28	Practical
32-L29	Study about Electron Transport Chain.
33-L30	Photophosphorylation
34- L31	C3 Cycle
35- L32	C4 Cycle
36- L33	CAM Pathway.
37- P34	Practical
38-P35	Practical – Quantitative Estimation of Carotenoid Content in Flowers.
39- P36	Practical
40- L37	Photorespiration.
41- L38	Glycolysis
42-P3	TCA Cycle
43- L39	Study about Oxidative Phosphorylation
44- P40	Practical
45- P41	Practical – Rate of Photosynthesis in Different Concentrations of Bi-Carbonate-Bubble Method.
46- P42	Practical
47- L43	Study about Growth and Growth Curve
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Different Phases of Growth Curve.

53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Measurement of Stomatal Index.
56- L51	Practical
57- L52	Growth Hormones.
58- L53	Auxin and Gibberellic Acid
59-P4	**College level meeting/ function**
60- L54	Cytokinin, Ethylene and Absisic acid
61- L55	Various methods of Seed Dormancy and Breaking of Seed Dormancy.
62- L56	Stress Physiology
63- L57	Biotic and Abiotic Factors of Stress
64- L58	Differentiate Photoperiodism and Vernalization.
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Effect of Temperature on Permeability of Plasma Membrane.
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about Physiology of plants.
CO2	Know about absorption mechanism of plants.
CO3	Know about the different mechanism of Stomatal Transpiration in Plants.
CO4	To learn about differen kind of Photophosphorylations.
CO5	To know about Oxidative Phosphorylation..
CO6	To know about uses of Auxin, Gibbrellic Acid, Cytokinin etc.
CO7	To know about Photoperiodism and Vernalisation.
CO8	To know about Seed Dormancy.
CO9	To know about Stress Physiology.
Experimental Learning	
EL1	Know about Stomatal Index.
EL2	Know about how to Measure the Photosynthetic Rate.
EL3	Know about Stomatal Index.
EL4	Study about Water Potential.

Integrated Activity	
IA1	Study about Osmosis.
IA2	To study Tissue Tension.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

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Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc Botany
Course Name	Environmental Studies
Course Code	**SEVS11**
Class	I-year (2017-2018)
Semester	Odd
Staff Name	Mr.S.Darwin Paul Edison, Mr.V.K. Stanley Raja
Credits	2
L. Hours /P. Hours	2 / WK
Total 30Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 20 Hrs (5 units; 5×4=20; 4Hrs /unit)	

Course Objectives

- To understand the natural resources.
- To learn about Eco system
- To understand the Biodiversity and Its Conservation
- To identify the Environmental Pollution
- To learn Social issues and the Environment

Syllabus

ENVIRONMENTAL STUDIES

Unit I

Definition, scope and importance Natural resources and associated problems:

a) Forest resources: Use and over-exploitation, deforestation, timber extraction, dams and their effects on forests and tribal people.

b) Water resources: Use and over-utilization of surface and ground water, floods, drought, dams-benefits and problems, water conservation and watershed management.

c) Mineral resources: Use and exploitation, environmental effects.

d) Food resources: World food problems, changes, effects of modern agriculture, fertilizer-pesticide problems.

e) Energy resources: Growing energy needs, renewable and non renewable energy sources, alternate energy sources.

f) Land resources: Land as a resource, land degradation, man-induced landslides, soil erosion and desertification.

UNIT II: ECOSYSTEMS

a) Forest Ecosystem b) Grassland Ecosystem c) Desert ecosystem d) Aquatic Ecosystem (Ponds, rivers, oceans, estuaries) Energy flow in the ecosystem Ecological succession Food Chains, Food Webs and Ecological Pyramids.

UNIT III: BIODIVERSITY AND ITS CONSERVATION

Introduction Definition: Genetic, species and ecosystem diversity. Bio geographical classification of India Values of Biodiversity Bio diversity at global, national and local levels India as a mega-diversity nation Hot-Spots of biodiversity Threats to biodiversity Endangered and endemic species of India Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT IV: ENVIRONMENTAL POLLUTION

Definition- Causes, effects and control measures of:- a) Air Pollution b) Water Pollution c) Soil Pollution d) Marine Pollution e) Noise Pollution. f) Thermal Pollution Solid Waste Management Disaster Management: Floods, earthquake, cyclone and landslides.

UNIT V: SOCIAL ISSUES AND THE ENVIRONMENT

Climatic change, global warming, acid rain, ozone depletion. Wasteland reclamation Consumerism and Waste products, use and through plastics Environment Protection Act Air (Prevention and Control of Pollution) Act Water (Prevention and Control of Pollution) Act Wildlife Protection Act Forest Conservation Act Population Explosion - Family Welfare Programme Human Rights.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16.06.2017
1-L1	Definition, scope and importance of Natural resources
2-L2	Water resources and food resources
3- P1	**Welcoming of First year and Inauguration of Botany Association**
4-L3	Mineral resources, Food resources, Energy resources and Land resources
5-L4	**Allotting portion for Internal Test-I**
	Internal Test I begins
6-IT-I	**Internal Test-I**
7-L5	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
8-L6	Forest Ecosystem and Grassland Ecosystem
9-L7	Desert ecosystem and Aquatic Ecosystem
10-P2	**College level meeting/Cell function**
11-L8	Biodiversity and its Conservation
12-L9	Definition: Genetic, species and ecosystem diversity.

13-P3	Biogeographical classification of India Values of Biodiversity
14-L10	Environmental Pollution Definition- Causes, effects and control measures
15-L11	Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution and Thermal Pollution
16-L12	**Allotting portion for Internal Test-II**
	Internal Test II begins
17-IT-1	**Internal Test-II**
18-L13	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
19-L14	Global warming
20- P2	**College level meeting/ function**
21-L15	Environment Protection Act Air (Prevention and Control of Pollution) Act Water (Prevention and Control of Pollution) Act
22-L16	Wildlife Protection Act Forest Conservation Act
23- L17	**Allotting portion for Internal Test-III**
	Internal Test III begins
24- IT-III	**Internal Test-III**
25-L18	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
26-MT	**Model Test**
27-MT	**Model Test**
28-MT	**Model Test**
29-L19	**Model test paper distribution and previous year university question paper discussion**
30-L20	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course "<History of India up to 647 A.D >"
CO1	Learned about natural resources of India
CO2	Identify the important resources
CO3	Study about the importance of Eco system in India
CO4	Discuss the Biodiversity and its Conservation
CO5	Learned Biogeographical classification of India and Values of Biodiversity
CO6	Know about the causes for the Environmental Pollution
CO7	Study about how to control the various pollution
CO8	Learned about Global warming
CO9	Study about the important environmental related Acts

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

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Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.A. Botany
Course Name	Value Based Education
Course Code	**SVBE21**
Class	I-year (2017-2018)
Semester	Even
Staff Name	Mr. S.Darwin Paul Edison, Mr. V.K Stanley Raja
Credits	2
L. Hours /P. Hours	2 / WK
Total 30Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 20 Hrs (5 units; 5×4=20; 4Hrs /unit)	

Course Objectives

- To enable the students to understand the social realities and to inculcate an essential value system towards building a health society.
- To learn about Social Justice
- To understand the Human Rights and Marginalized People
- To identify the Social Issues and Communal Harmony
- To learn Values and Ethics

Syllabus

VALUE BASED EDUCATION

Unit I:

Social Justice - Definition – need – parameters of social justice – factors responsible for social injustice – caste and gender – contributions of social reformers.

Unit II :

Human Rights and Marginalized People Concept of Human Rights – Principles of human rights – human rights and Indian constitution – Rights of Women and children – violence against women – Rights of marginalized People – like women, children, dalits, minorities, physically challenged etc

Unit III:

Social Issues and Communal Harmony Social issues – causes and magnitude - alcoholism, drug addiction, poverty, unemployment etc – communal harmany –concept –religion and its place in public in public domain – separation of religion from politics –secularism role of civil society

Unit IV:

Media Education and Globalized World Scenario Mass media –functions –characteristics – need and purpose of media literacy – effects and influence - - youth and children – media power – socio cultural and political consequences mass mediated culture - - consumeristic culture – Globalization – new media- prospects and challenges

Unit V:

Values and Ethics Personal values – family values – social values – cultural values – Professional values – and overall ethics – duties and responsibilities

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Social Justice – Definition, parameters of social justice
2-L2	Factors responsible for social injustice – caste and gender – contributions of social reformers
3- P1	**Inauguration of History Association**
4-L3	Human Rights and Marginalized People Concept of Human Rights
5-L4	**Allotting portion for Internal Test-I**
	Internal Test I begins
6-IT-I	**Internal Test-I**
7-L5	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
8-L6	Rights of Women and children – violence against women
9-L7	Social Issues and Communal Harmony Social issues
10-P2	**College level meeting/Cell function**
11-L8	Separation of religion from politics Secularism role of civil society
12-L9	Media Education and Globalized World Scenario
13-P3	Socio cultural and political consequences mass mediated culture
14-L10	Globalization
15-L11	Values and Ethics
16-L12	**Allotting portion for Internal Test-II**
	Internal Test II begins
17-IT-1	**Internal Test-II**
18-L13	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
19-L14	Personal values – family values – social values
20- P2	**College level meeting/ function**

21-L15	Cultural values – Professional values – and overall ethics
22-L16	Duties and responsibilities
23- L17	**Allotting portion for Internal Test-III**
	Internal Test III begins
24- IT-III	**Internal Test-III**
25-L18	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
26-MT	**Model Test**
27-MT	**Model Test**
28-MT	**Model Test**
29-L19	**Model test paper distribution and previous year university question paper discussion**
30-L20	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**CO's** of the course "<Value Based Education >"
CO1	Learned about Social Justice
CO2	Identify the parameters of social justice
CO3	Study about the importance of human rights
CO4	Discuss the Women and children Rights
CO5	Know about the Social Issues and Communal Harmony
CO6	Study about the causes for the alcoholism, drug addiction, poverty, unemployment etc
CO7	Study about the importance of Media Education
CO8	Learned about Globalization
CO9	Study about the important Values and Ethics

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN (2016-2017)

(Prepared by staff member handling the course)

Programme Name	B.Sc Botany
Course Name	Personality Development
Course Code	**JCSB5A**
Class	III-year (2014-2015)
Semester	Odd
Staff Name	Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK
Total 60Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10Hrs /unit)	

Course Objectives

- To know about the importance of Personality Development.
- To learn how to Developing Self – Awareness
- To understand the Leadership quality
- To utilize the different types of skills
- To learn Significance of managing Emotional intelligence

Syllabus

PERSONALITY DEVELOPMENT

UNIT -I

PERSONALITY - Definition – Determinants – Personality Traits –Theories of Personality – Importance of Personality Development. SELF AWARENESS – Meaning – Benefits of Self – Awareness – Developing Self – Awareness. SWOT – Meaning – Importance- Application – Components. GOAL SETTING Meaning- Importance – Effective goal setting – Principles of goal setting – Goal setting at the Right level.

UNIT – II

SELF MONITORING – Meaning – High self – monitor versus low self monitor – Advantages and Disadvantages self monitor- Self –monitoring and job performance. PERCEPTION- Definition- Factor influencing perception- Perception process –Errors in perception – Avoiding perceptual errors. ATTITUDE – Meaning- Formation of attitude – Types of attitude - Measurement of Attitudes – Barriers to attitude change – Methods to attitude change. ASSERTIVENESS - Meaning –

Assertiveness in Communication – Assertiveness Techniques – Benefits of being Assertive – Improving Assertiveness.

UNIT – III

TEAM BUILDING – Meaning – Types of teams – Importance of Team building- Creating Effective Team. LEADERSHIP – Definition – Leadership style- Theories of leadership – Qualities of an Effect leader. NEGOTIATION SKILLS – Meaning – Principles of Negotiation – Types of Negotiation – The Negotiation Process – Common mistakes in Negotiation process. CONFLICT MANAGEMENT – Definition- Types of Conflict- Levels of Conflict – Conflict Resolution – Conflict management .

UNIT –IV

COMMUNICATION – Definition – Importance of communication – Process of communication - Communication Symbols – Communication network – Barriers in communication – Overcoming Communication Barriers. TRANSACTIONAL ANALYSIS – Meaning – EGO States – Types of Transactions – Johari Window- Life Positions. EMOTIONAL INTELLIGENCE- Meaning – Components of Emotional Intelligence- Significance of managing Emotional intelligence – How to develop Emotional Quotient. STRESS MANAGEMENT – Meaning – Sources of Stress – Symptoms of Stress – Consequences of Stress – Managing Stress

UNIT – V

SOCIAL GRACES – Meaning – Social Grace at Work – Acquiring Social Graces. TABLE MANNERS – Meaning – Table Etiquettes in Multicultural Environment- Do's and Don'ts of Table Etiquettes. DRESS CODE – Meaning- Dress Code for selected Occasions – Dress Code for an Interview. GROUP DISCUSSION – Meaning – Personality traits required for Group Discussion- Process of Group Discussion- Group Discusson Topics. INTERVIEW – Definition- Types of skills – Employer Expectations –Planning for the Interview – Interview Questions- Critical Interview Questions.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on
1-L1	Personality - Definition – Determinants – Traits –Theories of Personality
2-L2	Importance of Personality Development. Self Awareness – Meaning – Benefits of Self – Awareness
3- L3	Developing Self – Awareness.
4-L4	SWOT – Meaning – Importance- Application – Components.
5-L5	Goal Setting Meaning- Importance –
6-L6	Effective goal setting – Principles of goal setting –
7-L7	Goal setting at the Right level.
8- P1	**Inauguration of History Association**
9- L8	Self Monitoring – Meaning – High self – monitor versus low self monitor
10- L9	Advantages and Disadvantages self monitor- Self –monitoring and job performance.
11-L10	Perception- Definition- Factor influencing perception-
12-L11	Perception process –Errors in perception – Avoiding perceptual errors.
13-L12	Attitude – Meaning- Formation of attitude – Types of attitude - Measurement of Attitudes – Barriers to attitude change – Methods to attitude change.
14-L13	Assertiveness - Meaning – Assertiveness in Communication – Assertiveness

	Techniques – Benefits of being Assertive – Improving Assertiveness
15-L14	**Allotting portion for Internal Test-I**
	Internal Test I begins on
16-L15	Team Building – Meaning – Types of teams – Importance of Team building- Creating Effective Team.
17-IT-1	**Internal Test-I**
18-L16	Leadership – Definition – Leadership style- Theories of leadership – Qualities of an Effect leader.
19-L17	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
20-L18	Negotiation Skills – Meaning – Principles of Negotiation – Types of Negotiation – The Negotiation Process – Common mistakes in Negotiation process.
21- L19	Conflict Management – Definition- Types of Conflict- Levels of Conflict – Conflict Resolution – Conflict management
22- P2	**College level meeting/Cell function**
23-L20	Communication – Definition – Importance of communication – Process of communication - Communication Symbols
24-L21	Transactional Analysis – Meaning – EGO States – Types of Transactions – Johari Window- Life Positions.
25-L22	Emotional Intelligence- Meaning – Components of Emotional Intelligence-
26-L23	Significance of managing Emotional intelligence – How to develop Emotional Quotient.
27-L24	Stress Management – Meaning – Sources of Stress –
28-L25	Symptoms of Stress – Consequences of Stress – Managing Stress
29-L26	Social Graces – Meaning – Social Grace at Work –
30-L27	Table Manners – Meaning – Table Etiquettes in Multicultural Environment-
31-L28	Do's and Don'ts of Table Etiquettes.
32-L29	Dress Code – Meaning- Dress Code for selected Occasions
33-L30	Dress Code for an Interview.
34- P3	**Department Seminar**
35-L31	Group Discussion – Meaning – Personality traits required for Group Discussion-
36-L32	**Allotting portion for Internal Test-II**
	Internal Test II begins on
37- L33	Process of Group Discussion-
38- IT-II	**Internal Test-II**
39-L34	Group Discusson Topics.
40-L35	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
41-L36	Interview – Definition-
42- L37	Types of skills –
43- L38	Employer Expectations –
44- P4	**College level meeting/ function**
45-L39	Planning for the Interview –
46-L40	Interview Questions-
47-L41	Critical Interview Questions.
48-L42	Acquiring Social Graces.
49-L43	Communication network –
50-L44	**Allotting portion for Internal Test-III**

	Internal Test III begins on
51 L45	Barriers in communication –
52- L46	Overcoming Communication Barriers.
53-IT-III	**Internal Test-III**
54-L47	Revision
55-L48	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
56- MT	**Model Test begins on**
57-MT	**Model Test**
58-MT	**Model Test**
59- L49	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on

Course Outcomes

Learning Outcomes	**COs** of the course "<Personality Development >"
CO1	After learning this course, students will able to explain the importance of Personality Development
CO2	Study about the Developing Self – Awareness
CO3	Understand the Leadership quality
CO4	Utilized the different types of skills
CO5	Learned about the Significance of managing Emotional intelligence
CO6	Discuss the SWOT Analyses
CO7	Learned improve the Personality Quality
CO8	Study about the Interview dress code
CO9	Understand the Self confidence

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Plant Anatomy and Micro Techniques
Course Code	SMBO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Meristems and theories of meristem tissue
- To discuss the type and function of simple and permanent tissue
- To explain the internal structure of moncot and dicot root stem and leaves
- To describe the normal and secondary thickening in dicot stem and root
- To illustrate the Nodal anatomy
- To describe the principles of Microscope.
- To describe the working nature of Light and Electron Microscope (TEM only)
- Explain types of staining techniques and Maceration techniques

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core – I
PLANT ANATOMY AND MICRO TECHNIQUES
(4 hrs/week)

UNIT –I **12Hrs**

Meristems – Characteristics of meristematic tissues – Types, functions and Theories of meristems. Structure and functions of simple and permanent tissues – parenchyma, collenchyma, sclerenchyma, xylem and phloem.

UNIT – II **12Hrs**

Structure of dicot stem and root, structure of monocot stem and root, structure of dicot and monocot leaves.

UNIT – III **12Hrs**

Normal secondary thickening in dicot stem and root, anomalous secondary growth in the stem of *Boerhaavia*and *Dracaena*.

UNIT – IV **12Hrs**

Nodal anatomy: Types of nodes – unilocular, trilocular and multilocular; leaf traces and leaf gaps; epidermal tissue system: stomatal types, hair, trichomes and glands.

UNIT – V **12Hrs**

Microscopy: Principle and working of simple and compound light microscopes and electron microscope (TEM only). Micro techniques – simple staining, double staining and preparation of permanent slides – Maceration

PRACTICALS:

1. To observe and identify the following slides showing
    a. Meristems – shoot apex and root apex
    b. Simple tissues
    c. Xylem elements
2. Primary structure of stem, root and leaves of dicot and monocot plant.
3. Normal secondary thickening in dicot stem and root.
4. Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
5. Maceration technique (Xylem elements only)
6. Demonstration: Preparation of double stained permanent slides.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Meristems – Characteristics of meristematic tissues
2-L2	Theories of meristems
3- L3	Types and functions of meristems
4-L4	Structure and functions of simple Tissue
5-L5	Structure and functions of parenchyma, collenchymas and sclerenchyma
6-L6	Structure and functions of Permanent tissue
7-L7	Structure and functions of xylem
8-L8	Structure and functions of phloem.
9-L9	UNIT II, Structure of dicot stem
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Structure of dicot root
12-L11	Structure of monocot stem
13-L12	Structure of monocot root
14-L13	Structure of dicot leaves.
15-L14	Structure of monocot leaves.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Explain the Secondary Thickening
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Secondary Thickening in dicot stem
21-P2	**College level meeting / Cell function**
22-L19	Explain the Secondary Thickening in dicot root
23-L20	Explain the process of secondary thickening
24-L21	Describe the concept of Cambium formation
25-L22	Analysis the role of secondary tissue formation
26-L23	Determine the functions of secondary tissue

27-L24	Explain the concept of anomalous Secondary growth
28-L25	Explain the anomalous Secondary growth in *Boerhaavia*
29-L26	Explain the anomalous Secondary growth in *Dracaena*
30-L27	UNIT IV, Explain what is Nodal anatomy
31-L28	To give an account on node and Types of node
32-L29	Unilocular node, Trilocular node, multilocular node, Leaf traces and Leaf gaps
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Epidermal Tissue system - Stomatal types, Epidermal Hair and Trichomes
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Working Principles of simple Microscope
39-L34	Working Principles of compound light Microscope
40-L35	Working Principles of Electron Microscope (TEM only)
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Micro Technique – Simple staining
44-L38	Micro Technique – Double staining
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Permanent slide
47-L41	Maceration
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Microscopy Techniques
50-L44	Recall the Micro Techniques (Simple staining, Double staining, Preparation of Permanent slide and Maceration
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To know the concept of Meristems and theories of meristem tissue
CO2	To know the type and function of simple and permanent tissue
CO3	To know the internal structure of moncot and dicot root stem and leaves
CO4	To know the normal and secondary thickening in dicot stem and

	root
CO5	To know the Nodal anatomy
CO6	To know the principles of Microscope.
CO7	To know the working nature of Light and Electron Microscope (TEM only)
CO8	To know types of staining techniques
CO9	To know the Maceration techniques
Experimental Learning	
EL1	To know the internal structure of meristems and simple tissue
EL2	Primary structure of stem, root and leaves of dicot and monocot plant.
EL3	Normal secondary thickening in dicot stem and root.
EL4	Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
EL5	Maceration technique (Xylem elements only) and Demonstration: Preparation of double stained permanent slides.
Integrated Activity	
IA1	Prepare model of Xylem elements
IA2	Preparation of double stained permanent slides for Dicot stem and root

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Algae and Bryophytes
Course Code	SMBO12
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Plant Diversity and Medicinal Botany
Course Code	SABO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Fungi, Plant Pathology and Lichenology
Course Code	SMBO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To recognize the General characteristic feature of Fungi
- To explain the classification of fungi
- To understand the economic importance of Fungi
- To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
- To understand the plant diseases
- To recognize the General characteristic feature of Lichen
- To explain the classification of Lichen
- To understand the economic importance of Lichen
- To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 3

FUNGI, PLANT PATHOLOGY AND LICHENOLOGY (4 hrs/week)

UNIT I **12Hrs**

General characters and classification of fungi based on Alexopoulous (1962). occurrence, systematic position, structure, reproduction and life cycle of Albugo and Mucor.

UNIT II **12Hrs**

Occurrence, systematic position, structure, reproduction and life cycle of Peziza and Puccinia. Economic importance of fungi: Role of fungi in medicine, industry, agriculture, food and food products.

UNIT III **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Tikka disease of groundnut, Red rot of sugarcane; Paddy blast.

UNIT IV **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Citrus canker, Bunchy top disease of Banana and Tobacco Mosaic viral disease.

UNIT V **12Hrs**

Lichens: General account, types and economic importance of Lichens. Structure and reproduction with special reference to *Usnea.*

PRACTICALS

1. Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.

2. Spotters:

i. Slides - *Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus and Teleutosorus

ii. Disease infected leaves showing Albugo and Puccinia; Usnea habit

iii. Observe and identify the following Plant diseases.

a. Tikka disease of Groundnut

b. Red Rot of Sugarcane

c. Paddy Blast

d. Citrus Canker

e. Bunchy Top of Banana

f. Tobacco Mosaic Viral disease

5. Maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I,** General characters of fungi
2-L2	Classification of fungi based on Alexopoulous (1962).
3- L3	occurrence, systematic position Albugo
4-L4	Structure Albugo
5-L5	Reproduction Albugo
6-L6	life cycle of Albugo
7-L7	occurrence,
8-L8	systematic position of Mucor.
9-L9	Structure of Mucor.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Reproduction of Mucor.
12-L11	life cycle of Mucor.
13-L12	**UNIT II** Occurrence, systematic position, structure, reproduction and life cycle of Peziza
14-L13	Occurrence, systematic position, structure, reproduction and life cycle of Puccinia.
15-L14	Economic importance of fungi
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	**UNIT III,** Introduction to plant diseases
	Entering Internal Test-I Marks into University portal
20-L18	Tikka disease of groundnut with special reference to the symptoms, etiology, dissemination and control measures.
21-P2	**College level meeting / Cell function**
22-L19	Red rot of sugarcane with special reference to the symptoms
23-L20	Red rot of sugarcane with special reference to etiology and dissemination
24-L21	Red rot of sugarcane with special reference to control measures:
25-L22	Paddy blast with special reference to the symptoms and etiology
26-L23	Dissemination and control measures of Paddy blast
27-L24	**UNIT IV** Citrus canker disease with special reference to the symptoms
28-L25	Citrus canker with special reference to etiology and dissemination
29-L26	Bunchy top disease of Banana with special reference to the symptoms
30-L27	Bunchy top disease of Banana with special reference to etiology and dissemination
31-L28	Tobacco Mosaic viral disease with special reference to the symptoms
32-L29	Tobacco Mosaic viral disease with special reference to etiology and dissemination
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	**UNIT V** Lichens: General account,
36-L32	**Allotting portion for Assignment/seminar**

37-IT-II	**Internal Test-II**
38-L33	Types of Lichen.
39-L34	Economic importance of Lichens
40-L35	Occurrence of *Usnea.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Systematic position of *Usnea.*
44-L38	Structure of *Usnea.*
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Reproduction of *Usnea.*
47-L41	Economic importance of *Usnea.*
48-L42	**Allotting portion for Internal Test-III**
49-L43	Economic importance of Lichen
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "**Fungi, Plant Pathology and Lichenology**"
CO1	To recognize the General characteristic feature of Fungi
CO2	To explain the classification of fungi
CO3	To understand the economic importance of Fungi
CO4	To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
CO5	To understand the plant diseases
CO6	To recognize the General characteristic feature of Lichen
CO7	To explain the classification of Lichen
CO8	To understand the economic importance of Lichen
CO9	To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen
Experimental Learning	
EL1	To know the Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.
EL2	*Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus

	and Teleutosorus.
EL3	Prepare the permanent slide
EL4	Preserve the plant Disease
Integrated Activity	
IA1	Prepare the permanent slide
IA2	Preserve the plant Disease

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Cell Biology & Embryology of Angiosperms
Course Code	SMBO 22
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of prokaryotic and eukaryotic cell
- To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
- Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
- Structure of Microsporoangium, Megasporogenesis
- To understand the Double fertilization process

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 4

CELL BIOLOGY & EMBRYOLOGY OF ANGIOSPERMS (4 hrs/week)

UNIT I Cell Biology: Structure of a Plant cell – prokaryotic and eukaryotic cell, structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.

UNIT II Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.

UNIT III Non-living inclusions - cystolith, raphides, starch grains. Cell Division: Mitosis and Meiosis.

UNIT IV Embryology : Structure of Microsporoangium, microsporogenesis, development of male gametophyte. Types and structure of megasporangium, Megasporogenesis, development of female gametophyte, Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type

UNIT V Double fertilization, types of endosperm – nuclear, cellular and helobial; Ruminate endosperm.Structure and Development of dicot embryo (Capsella) and Polyembryony.

PRACTICALS

Cell Biology

1. Mitosis using Onion roots.
2. Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
3. Non-living inclusions – Starch grains, Cystolith and Raphides.

Embryology of Angiosperms

1. Dissect out any one stage of embryo.
2. Identification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony
3. Specimen – Ruminate endosperm

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I** Introduction about Cell Biology
2-L2	Structure of a Plant cell
3- L3	Structure of prokaryotic and eukaryotic cell
4-L4	structure of cell wall
5-L5	Functions of cell wall
6-L6	Structure of plasma membrane
7-L7	Functions of plasma membrane
8-L8	Structure and Functions of endoplasmic reticulum
9-L9	Structure and Functions of ribosome.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II Structure of Mitochondria
12-L11	Functions of Mitochondria
13-L12	Structure and functions of Chloroplast
14-L13	Structure and functions of Nucleus
15-L14	Structure and functions of Chromosome.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Non-living inclusions Introduction
	Entering Internal Test-I Marks into University portal

20-L18	Cystolith
21-P2	**College level meeting / Cell function**
22-L19	Raphides
23-L20	Starch grains
24-L21	Cell Division Introduction
25-L22	Mitosis
26-L23	Meiosis. I
27-L24	Meiosis. II
28-L25	UNIT IV, Embryology Introduction
29-L26	Structure of Microsporoangium
30-L27	Microsporogenesis
31-L28	Development of male gametophyte
32-L29	Types and structure of megasporangium
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Development of female gametophyte
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type
39-L34	UNIT V, Double fertilization
40-L35	Types of endosperm
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Nuclear and Cellular endosperm
44-L38	Helobial endosperm
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Ruminate endosperm
47-L41	Development of dicot embryo
48-L42	**Allotting portion for Internal Test-III**
49-L43	Polyembryony.
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Cell Biology & Embryology of Angiosperms"
	To understand the concept of prokaryotic and eukaryotic cell
CO1	To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
CO2	Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
CO3	Structure of Microsporoangium, Megasporogenesis
CO4	To understand the Double fertilization process
Experimental Learning	
EL1	Mitosis using Onion roots.
EL2	Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
EL3	Non-living inclusions – Starch grains, Cystolith and Raphides.
EL4	dentification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony Ruminate endosperm
Integrated Activity	
IA1	Prepare of Nucleus
IA2	Fixing of Mitosis using Onion roots.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Embryology, Plant Anatomy, Physiology and Biotechnology
Course Code	SABO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Structure and development of microsporangium and megasporangium.
- To explain the concept of Double fertilization,
- To explain the Meristem - Structure and classification
- To know the function of simple and complex tissue
- To Explain the Photosynthesis
- To understand the process of Transpiration Absorption of water Ascent of sap
- To know the Tissue Culture – Scope and importance
- Mass culture of Nostoc and Yeast

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester-II / Allied –II

Semester II/IV

EMBRYOLOGY, PLANT ANATOMY, PHYSIOLOGY AND BIOTECHNOLOGY
4hrs/week

UNIT – I Structure and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.

UNIT – II Meristem - Structure and classification. Simple tissues, complex tissues; Primary structure of Dicot and Monocot stem and root; Structure of leaf; Normal secondary thickening in dicot stem.

UNIT – III Absorption of water – diffusion, osmosis, imbibition, mechanism of absorption of water; Ascent of sap – (cohesion theory only); Transpiration – Types, Mechanism of stomatal transpiration (Starch – sugar hypothesis); Photosynthesis importance of photosynthesis, Mechanism of Photosynthesis – Light and dark reaction (Calvin cycle).

UNIT – IV Nostoc - Morphology, Use as Biofertilizerand Mass cultivation; Structure,multiplication (budding and fission) and Mass culture of Yeast.

UNIT – V Tissue Culture – Scope and importance - totipotency, Nutrient media(M.S medium) Callus and Meristem Culture; Applications of plant tissue culture.

PRACTICAL – 2

1) Dissect out young embryo from Tridax flower bud.

2) Make suitable micro-preparations of dicot and monocot stem, root

3) Demonstrate the physiology experimental set up –Potato osmoscope, Ganong's light screen, Bell jar experiment

4)) Identify the Photograph/ Slide/ Specimen/setup

(i) Nostoc

(ii) Yeast

(iii) Callus culture,

(iv) Meristem culture.

6) Maintain a record note book for external and internal evaluation

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Structure of microsporangium and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.
2-L2	Development of microsporangium
3- L3	Structure and types of megasporangium
4-L4	development of megasporangium
5-L5	Development of male gametophyte

6-L6	Development of female gametophyte
7-L7	Double fertilization
8-L8	Endosperm – types.
9-L9	Structure of dicot embryo.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II II Meristem - Structure and classification
12-L11	Simple tissues, complex tissues
13-L12	Monocot stem and root
14-L13	Dicot stem and root
15-L14	Normal secondary thickening in dicot stem.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Absorption of water – diffusion
	Entering Internal Test-I Marks into University portal
20-L18	Osmosis and imbibition
21-P2	**College level meeting / Cell function**
22-L19	mechanism of absorption of water; Ascent of sap – (cohesion theory only)
23-L20	Transpiration – Types
24-L21	Mechanism of stomatal transpiration (Starch – sugar hypothesis);
25-L22	Importance of photosynthesis
26-L23	Mechanism of Photosynthesis
27-L24	Light and dark reaction (Calvin cycle).
28-L25	Light and dark reaction (Calvin cycle).
29-L26	Light and dark reaction (Calvin cycle).
30-L27	**UNIT IV** Nostoc - Morphology,
31-L28	Use as Biofertilizer
32-L29	Structure and multiplication (budding and fission) of Yeast
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Mass culture of Yeast.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Tissue Culture Introduction
39-L34	Tissue Culture – Scope
40-L35	Tissue Culture –importance
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Totipotency
44-L38	Nutrient media(M.S medium)
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Callus Culture
47-L41	Meristem Culture
48-L42	**Allotting portion for Internal Test-III**
49-L43	Applications of plant tissue culture.
50-L44	Applications of plant tissue culture.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Embryology, Plant Anatomy, Physiology and Biotechnology"
CO1	To understand the Structure and development of microsporangium and megasporangium.
CO2	To explain the concept of Double fertilization,
CO3	To explain the Meristem - Structure and classification
CO4	To know the function of simple and complex tissue
CO5	To Explain the Photosynthesis
CO6	To understand the process of Transpiration Absorption of water Ascent of sap
CO7	To know the Tissue Culture – Scope and importance
CO8	Mass culture of Nostoc and Yeast
Experimental Learning	
EL1	Make suitable micro-preparations of dicot and monocot stem
EL2	Demonstrate the physiology experimental set up –Potato osmoscope
EL3	Ganong's light screen, Bell jar experiment
EL4	(i) Nostoc (ii) Yeast (iii) Callus culture, (iv) Meristem culture.
Integrated Activity	
IA1	Preserve the permanent slide for Mocot , dicot stem and root
IA2	Preparation of mass culture of Yeast and Nostoc

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Organic Farming
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mr. V.K Stanley Raja 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the soil Profile
- To discuss the Organic Matter
- To explain the Soil Air and water
- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
- To explain the Green Manure: Plant wastes
- To explain the Biofertilizers
- Explain the Vermicomposting:

MSU/2017-18/ B. Sc Botany / Semester –III
Skill Based Subject -I (B) ORGANIC FARMING (4hrs/week)

Unit –I **(11hr)**
Soil Science: Brief Account of Soil Profile, Fertility of Soil – Importance of Organic Matter – Water Retentivity and Aeration of Soil.

Unit – II: **(12hr)**
Manure and Manuring: Organic Manure, Types, Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.

Unit – III **(10 hr)**
Green Manure: Plant wastes – Fallen leaves and Twigs, Humus Formation, Green Manuring, Mulching - Leaves of Trees like Pongamia, Gliricidia ,Azadirachta,andCalotropis, Compost making.

Unit-IV **(13hr)**

Biofertilizers: Rhizobium-Importance, Mass Production and Application, VAM Fungi – Importance, Mass production and Applications.

Unit–V **(14hr)**

Vermicomposting: Importance, Application and Production of Vermicompost, Preparation and importance of Panchagavyaas foliar spray

PRACTICALS:

9. To make suitable micro preparations of the following: Lycopodium Stem,
   Adiantum Stipe,
   Marsilea Petiole,
   Rhizome and Sporo carp.
   Pinus Stem and Needle,
   Gnetum Stem and Leaf.
10. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

    Paleobotany (Slide):
    Rhynia stem
    Lepidodendron stem
    Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Soil Science: Introduction
2-L2	Brief Account of Soil Profile
3- L3	Fertility of Soil
4-L4	Importance of Organic Matter
5-L5	Water Retentivity
6-L6	Aeration of Soil.
7-L7	UNIT II Manure and Manuring: Introduction, , Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
8-L8	Organic Manure
9-L9	Organic Manure Types
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Animal Wastes – Cattle Dung and Urine
12-L11	Poultry Wastes
13-L12	Slaughter Wastes
14-L13	Piggery Wastes
15-L14	Fishery Wastes
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**

18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III Green Manure: Plant wastes
	Entering Internal Test-I Marks into University portal
20-L18	Plant wastes – Fallen leaves and Twigs
21-P2	**College level meeting / Cell function**
22-L19	Humus Formation
23-L20	Green Manuring
24-L21	Mulching - Leaves of Trees like Pongamia
25-L22	Mulching - Leaves of Trees like Gliricidia
26-L23	Azadirachta
27-L24	Calotropis
28-L25	Compost making
29-L26	Biofertilizers: Rhizobium-Importance
30-L27	Mass production of VAM
31-L28	Mass production of VAM
32-L29	Applications of VAM
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Vermicomposting:
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Importance of Vermicomposting
39-L34	Vermiculture
40-L35	Production of Vermicompost Indoor
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Production of Vermicompost Out door
44-L38	Preparation of Panchagavyaas
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Panchagavyaas
47-L41	Application of Panchagavyaas
48-L42	**Allotting portion for Internal Test-III**
49-L43	Dosage of Panchagavyaas
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the soil Profile
CO2	➢ To discuss the Organic Matter
CO3	➢ To explain the Soil Air and water
CO4	➢ To Discuss the Stelar Evolution in Pteridophytes.
CO5	➢ To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
CO6	➢ To explain the Green Manure: Plant wastes
CO7	➢ To explain the Biofertilizers
CO8	➢ Explain the Vermicomposting:

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	SMBO 31
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the general character of Pteridophytes
- To discuss the classification of Pteridophytes
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea

- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character of Gymnosperms
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
- Economic importance of Gymnosperms
- Explain the Geological Time Scale

MSU/2017-2018/B.Sc. Botany/Semester-III/Core Paper – 5

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY (4hrs/week)

UNIIT I **(12L)**

Pteridophytes: General Characteristics and Classification of Pteridophytes (Sporne 1966), Psilotum and Lycopodium: Distribution, Systematic Position, Structure, Reproduction and Life History (need not study the development of gametophyte, sex organs and sporophyte).

UNIT II **(11L)**

Adiantum, Marsilea: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle (need not study the development of gametophytes, sex organ and sporophyte), Stelar Evolution in Pteridophytes.

UNIT III **(13L)**

Gymnosperms: General Characteristics and Classification of Gymnosperms (David Bierhorst, 1971), Pinus: Distribution, Systematic Position, Structure, Reproduction and Life History

UNIT IV **(14L)**

Gnetum: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of (need not study the Development of Sex Organs and Sporophyte). Economic Importance of Gymnosperms.

UNIT V **(10L)**

Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.

PRACTICALS:

11. To make suitable micro preparations of the following: Lycopodium Stem,
    Adiantum Stipe,
    Marsilea Petiole,
    Rhizome and Sporo carp.
    Pinus Stem and Needle,
    Gnetum Stem and Leaf.
12. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

    Paleobotany (Slide):
    Rhynia stem
    Lepidodendron stem
    Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Pteridophytes: General Characteristics
2-L2	Classification of Pteridophytes (Sporne 1966)
3- L3	Distribution, Systematic Position of Lycopodium
4-L4	Structure of Lycopodium
5-L5	Reproduction and Life History of Lycopodium
6-L6	Unit II Occurrence of Adiantum
7-L7	Distribution, Systematic Position of Adiantum
8-L8	Structure of Adiantum

9-L9	Reproduction and Life History of Adiantum
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Occurrence of Marsilea
12-L11	Distribution, Systematic Position of Marsilea
13-L12	Structure of Marsilea
14-L13	Reproduction and Life History of Marsilea
15-L14	Unit III Gymnosperms: General Characteristics
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Classification of Gymnosperms
	Entering Internal Test-I Marks into University portal
20-L18	Distribution, Systematic Position of Pinus
21-P2	**College level meeting / Cell function**
22-L19	Structure of Pinus
23-L20	Reproduction of Pinus
24-L21	Reproduction of Pinus
25-L22	Life History of Pinus
26-L23	UNIT IV Gnetum: Occurrence
27-L24	Systematic Position of Gnetum
28-L25	Structure of Gnetum
29-L26	Reproduction of Gnetum
30-L27	Life Cycle of of Gnetum
31-L28	Economic Importance of Gymnosperms
32-L29	Revision of IV Unit
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Geological Time Scale
39-L34	Methods of Fossilization
40-L35	Methods of Fossilization
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Brief Study of Rhynia
44-L38	Brief Study of Rhynia
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Brief Study of Lepidodendron
47-L41	Brief Study of Lepidodendron
48-L42	**Allotting portion for Internal Test-III**
49-L43	Brief Study of Lyginopteris.
50-L44	Brief Study of Lyginopteris.
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**

54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To understand the general character of Pteridophytes
CO2	To discuss the classification of Pteridophytes
CO3	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea
CO4	To Discuss the Stelar Evolution in Pteridophytes.
CO5	To understand the general character of Gymnosperms
CO6	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
CO7	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
CO8	Economic importance of Gymnosperms
CO9	Explain the Geological Time Scale
Experimental Learning	
EL1	micro preparations of the following: Lycopodium Stem, Adiantum Stipe, Marsilea Petiole, Rhizome and Sporo carp. Pinus Stem and Needle,
EL2	To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.
EL3	Paleobotany (Slide): Rhynia stem Lepidodendron stem Lyginopteris stem.
Integrated Activity	
IA1	Prepare Permanent Slide for Pinus
IA2	Prepare Permanent Slide Marsilea

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature

Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Microbiology and Techniques In Biology
Course Code	SMBO41
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. V.K. Stanley Raja 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Microbiology
- To discuss the Five Kingdom Classification
- To explain the Gram Staining
- To describe the Virus and Bacteriophage
- To illustrate the Bacterio flora in Milk
- To describe the principles of Microscope.
- To describe the working nature of UV Spectrometer, MRI, ECG

MSU/2017-18/ B. Sc Botany/ Semester –IV /Core paper-6

MICROBIOLOGY AND TECHNIQUES IN BIOLOGY (4hrs/week)

UNIIT I (13L)

Microbiology: Brief History and Development, Classification of Microorganisms (Whittaker‟s Five Kingdom Concept), Bacteria - Outline of Classification (Bergey‟smanual), Ultra Structure, Nutritional Types and Reproduction of Bacteria, Media Preparation and Pure Culture techniques of Bacteria, Staining Technique - Gram Staining.

UNIT II (12L)

Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.

UNIT III (12L)

Microbes: Microbes in Food Production, Spoilage, Poisoning and Preservation. Bacteria Flora in Milk, Pasteurization of Milk and Milk Products, Bacterial Pathogens and Water Pollution, Drinking Water as a Vehicle of Diseases, Purification of water.

UNIT IV (11L)

Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.

UNIT V (12L)

Electrophoresis: Basic principles, electrophoretic mobility, factors, isoelectric focusing. Types- vertical and horizontal agarose and poly acrylamide gel electrophoresis, detection and recovery of electrophorogram. Gel documentation system. X-ray crystallography.

PRACTICALS

1. Preparation of Culture Media for Bacteria.

2. Preparation of Serial Dilution.

3. Isolation of Bacteria – Streak Plate Method

4. Identify the type of Bacteria using Gram Staining.

5. Analysis of Milk – Methylene Blue Dye Reduction Test.

6. Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Microbiology: Brief History
2-L2	Development of Microbiology
3- L3	Classification of Microorganisms (Whittaker‟s Five Kingdom Concept)
4-L4	Bacteria - Outline of Classification
5-L5	Bacteria - Outline of Classification
6-L6	Ultra Structure of Bacteria
7-L7	Nutritional Types of Bacteria
8-L8	Reproduction of Bacteria
9-L9	Media Preparation and Pure Culture techniques of Bacteria,
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Staining Technique - Gram Staining.

12-L11	UNIT II Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.
13-L12	Structure of HIV
14-L13	Reproduction of HIV
15-L14	T4 Bacteriophages, Viroids, Virions and Mycoplasma
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Transmission of Viruses and Purification of Viruses.
	Entering Internal Test-I Marks into University portal
20-L18	UNIT III
21-P2	**College level meeting / Cell function**
22-L19	Microbes: Microbes in Food Production
23-L20	Spoilage,
24-L21	Poisoning
25-L22	Preservation
26-L23	Bacteria Flora in Milk
27-L24	Pasteurization of Milk and Milk Products
28-L25	Bacterial Pathogens
29-L26	Water Pollution, Drinking Water as a Vehicle of Diseases
30-L27	Purification of water.
31-L28	UNIT IV, Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.
32-L29	Instruments: Principles, Working Mechanism and Applications of UV Spectrometer
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Instruments: Principles, Working Mechanism and Applications of Centrifuge
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Instruments: Principles, Working Mechanism and Applications of ECG
39-L34	Instruments: Principles, Working Mechanism and Applications of MRI
40-L35	Instruments: Principles, Working Mechanism and Applications of Positron emission tomography.
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Electrophoresis: Basic principles,
44-L38	electrophoretic isoelectric focusing
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Types- vertical and horizontal agarose
47-L41	Acrylamide gel electrophoresis
48-L42	**Allotting portion for Internal Test-III**
49-L43	Detection and recovery of electrophorogram.
50-L44	X-ray crystallography.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the concept of Microbiology
CO2	➢ To discuss the Five Kingdom Classification
CO3	➢ To explain the Gram Staining
CO4	➢ To describe the Virus and Bacteriophage
CO5	➢ To illustrate the Bacterio flora in Milk
CO6	➢ To describe the principles of Microscope.
CO7	➢ To describe the working nature of UV Spectrometer, MRI, ECG
Experimental Learning	
EL1	Preparation of Culture Media for Bacteria.
EL2	2. Preparation of Serial Dilution.
EL3	3. Isolation of Bacteria – Streak Plate Method
EL4	4. Identify the type of Bacteria using Gram Staining.
EL5	5. Analysis of Milk – Methylene Blue Dye Reduction Test.
	Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.
Integrated Activity	
IA1	Prepare the gram Staining for the given Bacterial Culture
IA2	Isolation of Bacteria – Streak Plate Method

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Preservation of fruits and vegetables
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. S.Darwin 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
- To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
- To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
- To describe the Sauce, Pickles & Ketchup
- To illustrate the Canning of Fruits& Vegetables

MSU/2017-18/ B. Sc Botany / Semester –III Skill Based Subject -I (A)
PRESERVATION OF FRUITS AND VEGETABLES (4hrs/week)

Unit-I (11L)

Fruits and Vegetables: Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.

Unit-II (13L)

Principles of Preservation: Importance and Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.

Unit-III (13L)

Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.

Unit- IV (11 L)

Preparation of Chutney, Sauce, Pickles & Ketchup: Preparation of Chutney- Mango, Sauce – Tomato,Pickles- Lime, Mango and Garlic, KetchupTomato. Drying of fruits: Banana, Mango, Grapes and Fig.

Unit- V (12 L)

Canning of Fruits& Vegetables: Mango and Banana; Tomato, Carrot, Bean and Mushrooms.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	Fruits and Vegetables: Nutritive values
2-L2	factors affecting storage of Fruits
3- L3	factors affecting storage of Vegetables
4-L4	Spoilage of fruits - microbial, enzymatic and insects.
5-L5	Spoilage of vegetables - microbial, enzymatic and insects.
6-L6	Unit II Principles of Preservation
7-L7	Importance of Preservation
8-L8	Methods of Preservation
9-L9	Refrigeration
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Freezing
12-L11	Canning,
13-L12	Drying
14-L13	Dehydration
15-L14	Chemical preservatives.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis**-
19-L17	UNIT III Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
	Entering Internal Test-I Marks into University portal
20-L18	Methods of preparation of Fruit Juice- Orange,
21-P2	**College level meeting / Cell function**
22-L19	Squashes- grape
23-L20	Squashes- Pine apple
24-L21	Jam - Tomato
25-L22	Jam - Mixed Fruit
26-L23	Jellies- Guava
27-L24	UNIT Preparation of Chutney.
28-L25	Drying of fruits

29-L26	Sauce
30-L27	Pickles
31-L28	Ketchup
32-L29	Preparation of Chutney- Mango
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Pickles- Lime
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Pickles Mango
39-L34	Pickles Garlic
40-L35	Drying of fruits
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Drying of fruits: Banana
44-L38	Drying of fruits: Mango
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Drying of fruits: Grapes
47-L41	Drying of fig
48-L42	**Allotting portion for Internal Test-III**
49-L43	Clarifying the doubts in the Syllabus
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
CO2	➢ To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
CO3	➢ To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit ,

	Jellies- Guava.
CO4	➢ To describe the Sauce, Pickles & Ketchup
CO5	➢ To illustrate the Canning of Fruits& Vegetables

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Biotechnology and Genetic Engineering
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. D. Abiya Chelliah
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the principle of Tissue Culture Laboratory
- To know the Meristem Culture and Artificial Seed.
- Basic knowledge about Techniques of genetic engineering
- To know about Identification of Recombinants
- To explain the concept of DNA transfer techniques.

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 1A

BIOTECHNOLOGY AND GENETIC ENGINEERING (5hrs/week)

UNIT1 (15L)

Tissue Culture: Introduction, definition, history, scope and importance of plant tissue culture, Totipotency of cells, Tissue culture laboratory- organization and requirements, Sterilization techniques, Nutrient media- composition and preparation.

UNIT 11 (14L)

Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Protoplast isolation, fusion, selection of hybrids and regeneration.Cybrids– production and applications, Artificial seed: production, advantages and disadvantages.

UNIT 111 (16L)

Techniques of genetic engineering: Isolation of specific genes, enzymes used in gene cloning, Cloning Vectors - Plasmids,Cosmids and Phagemids,cDNALibraries,Agrobacterium mediated gene transfer in plants,GM plants – BtBrinjal, Bt Cotton, Golden rice. Bioethical issues.

UNIT 1V (16L)

Identification of Recombinants: Insertional inactivation, Immunochemical Method and Colony Hybridization Technique.Selection of Recombinant using Selective Medium and reporter genes, Blotting Techniques – Southern, Northern and Western Blotting.

UNIT V (14L)

Mutagenesis& DNA transfer techniques: Site directed mutagenesis and random mutagenesis; DNA transfer techniques: Physical method Microinjection, Chemical method-Calcium phosphate method, Electrical method Electroporation, Natural-Conjugation and bacterial transformation.

Spotters/Photographs

i. Callus culture from Carrot Explant.

ii. Protoplast Isolation. ‘iii. Plasmids – Ti plasmids iv. Gene cloning in E. Coli. v. Agrobacterium mediated gene transfer. vi. Blotting Techniques.

vii. Colony Hybridization technique. viii. Transgenic Plants prescribed in the syllabus. To maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Tissue Culture: Introduction,
2-L2	Definition of Tissue Culture
3- L3	history, scope and importance of plant tissue culture
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Totipotency of cells
8- L1	Tissue culture laboratory- organization
9- L8	Tissue culture laboratory requirements
10- L9	Sterilization techniques
11-L10	.Protoplast Isolation
12-P11	Protoplast Isolation
13-P12	Protoplast Isolation
14-P13	Practical
15-L14	Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Artificial seed: production, advantages and disadvantages.
16-L15	Protoplast isolation, fusion, selection of hybrids and regeneration.
17- L16	Cybrids– production and applications,
18-L17	Artificial seed: production
19- P18	Plasmids – Ti plasmids
20- P19	Plasmids – Ti plasmids
21-P20	Plasmids – Ti plasmids
	Internal Test I begins
22- L21	Artificial seed: production, advantages and disadvantages
23- IT-1	**Internal Test-I**
24- L22	Artificial seed: production, advantages and disadvantages
25- L23	Classification of amino acids.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Techniques of genetic engineering:
28- L26	enzymes used in gene cloning
29- P27	Gene cloning in E. Coli.
30- P2	Gene cloning in E. Coli.
31-P28	Gene cloning in E. Coli.
32-L29	Cloning Vectors - Plasmids

33-L30	Cosmids and Phagemids
34- L31	cDNALibraries
35- L32	Agrobacterium mediated gene transfer in plants
36- L33	GM plants – Bt Brinjal, Bt Cotton, Golden rice. Bioethical issues.
37- P34	Agrobacterium mediated gene transfer. vi. Blotting Techniques
38-P35	Agrobacterium mediated gene transfer. vi. Blotting Techniques
39- P36	Agrobacterium mediated gene transfer. vi. Blotting Techniques
40- L37	Golden rice.
41- L38	Golden rice.
42-P3	Bioethical issues.
43- L39	Bioethical issues.
44- P40	Identification of Recombinants: Insertional inactivation, Blotting Techniques – Southern, Northern and Western Blotting.
45- P41	Immunochemical Method and Colony Hybridization Technique
46- P42	Selection of Recombinant using Selective Medium and reporter genes
47- L43	Blotting Techniques – Southern
	Internal Test II begins
48- L44	Blotting Techniques –Northern and Western Blotting
49-IT-II	**Internal Test-II**
50-L45	Blotting Techniques Western Blotting
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Mutagenesis& DNA transfer techniques: Natural-Conjugation and bacterial transformation.
53- P48	Site directed mutagenesis and random mutagenesis;
54- P49	Site directed mutagenesis and random mutagenesis;
55- P50	DNA transfer techniques: Physical method Microinjection
56- L51	Practical
57- L52	Bioenergetics of Chloroplast
58- L53	Mitochondria,
59-P4	**College level meeting/ function**
60- L54	Chemical method-Calcium phosphate method
61- L55	Electrical method Electroporation,
62- L56	Natural-Conjugation and bacterial transformation
63- L57	Natural-Conjugation and bacterial transformation
64- L58	Natural-Conjugation and bacterial transformation
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper**

	discussion
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	➢ To know the principle of Tissue Culture Laboratory
CO2	➢ To know the Meristem Culture and Artificial Seed.
CO3	➢ Basic knowledge about Techniques of genetic engineering
CO4	➢ To know about Identification of Recombinants
CO5	➢ To explain the concept of DNA transfer techniques.
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Horticulture and plant Breeding
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Mr. V.K Stanley Raja
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the Scope, importance and divisions of Horticulture
- To know the : Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components
- Basic knowledge Kitchen garden: Establishment, Organic manures and growth regulators in horticulture,
- To know about Plant Breeding Nature, Scope and Objectives
- To explain the concept of Mutation breeding: Procedure and practices, Mutagens

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 2A

HORTICULTURE & PLANT BREEDING (5hrs/week)

UNIT - I (14L)

Horticulture: Scope, importance and divisions, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.

UNIT - II (16L) Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets, water garden, terrarium, topiary and Bonsai.

UNIT - III (15L) Kitchen garden: Establishment, Organic manures and growth regulators in horticulture, Plant protection measures for horticulture, Seed Propagation methods, Preparation of Nursery beds, Transplantation – steps and Methods.

UNIT - IV (16L) Plant Breeding Nature, Scope and Objectives, Plant introduction, selection methods (pure line and mass), Hybridization techniques, Heterosis breeding, Interspecific and intergeneric hybridization.

UNIT – V (14L) Mutation breeding: Procedure and practices, Mutagens, Polyploidy breeding and its applications.Breeding for disease resistance.

PRACTICALS

Demonstration

i. Vegetative methods of propagation.

a. Cutting-Stem and Leaf cutting

b. Layering-Simple and air layering.

c. Grafting – Tongue grafting.

d. Budding – T-budding.

ii. Garden components -Rockery, hanging baskets, terrarium and topiary.

iii. Garden implements-spade, water can, pruning scissors, digging fork

iv. Designing Kitchen Garden.

v. Plant Breeding: Emasculation and Bagging methods

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin
1-L1	Horticulture: Scope, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.
2-L2	Horticulture: importance
3- L3	Horticulture: divisions
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Vegetative propagation methods- cutting,
8- L1	Vegetative propagation methods layering,
9- L8	Vegetative propagation methods- budding,
10- L9	Vegetative propagation methods- grafting
11-L10	. Vegetative propagation methods- vegetative propagules
12-P11	Unit 11 Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets,
13-P12	Formal Gardening
14-P13	Informal Gardening
15-L14	Design and Establishment of Garden
16-L15	Garden components
17- L16	garden implements
18-L17	lawn making
19- P18	glass house
20- P19	rockery
21-P20	hanging baskets
	Internal Test I begins
22- L21	water garden, terrarium, topiary and Bonsai.
23- IT-1	**Internal Test-I**
24- L22	Kitchen garden: Establishment,
25- L23	Organic manures and growth regulators in horticulture
26- L24	**Test Paper distribution and result analysis**

	Entering Internal Test-I Marks into University portal
27- L25	Plant protection measures for horticulture,
28- L26	Seed Propagation methods
29- P27	Preparation of Nursery beds
30- P2	Transplantation – steps
31-P28	Methods of Transplantation
32-L29	Plant Breeding Nature,.
33-L30	Scope and Objectives,
34- L31	Plant introduction, selection methods (pure line and mass),
35- L32	Hybridization techniques, Heterosis breeding
36- L33	, Interspecific
37- P34	Intergeneric hybridization
38-P35	Mutation breeding:
39- P36	Procedure and practices of
40- L37	Mutagens, Polyploidy breeding
41- L38	and its applications.Breeding for disease resistance.
42-P3	a. Cutting-Stem and Leaf cutting
43- L39	b. Layering-Simple and air layering.
44- P40	c. Grafting – Tongue grafting.
45- P41	d. Budding – T-budding.
46- P42	Garden components -Rockery,
47- L43	Garden components - hanging baskets
	Internal Test II begins
48- L44	terrarium and topiary.
49-IT-II	**Internal Test-II**
50-L45	Garden implements-spade,
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	ii. hanging baskets,
53- P48	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
54- P49	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
55- P50	Plant Breeding: Emasculation and Bagging methods
56- L51	Plant Breeding: Emasculation and Bagging methods
57- L52	
58- L53	
59-P4	**College level meeting/ function**
60- L54	Garden components
61- L55	iii. Garden implements
62- L56	
63- L57	
64- L58	
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical

69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	To know the Scope, importance and divisions of Horticulture
CO2	To know the : Types of gardens – Formal
CO3	Basic knowledge Kitchen garden: Establishment
CO4	To know about Plant Breeding Nature
CO5	To explain the concept of Mutation breeding: Procedure and practices
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Morphology and Taxonomy of Angiosperms
Course Code	JMPB51
Class	III year (2018-2019)
Semester	Odd
Staff Name	Dr. M. Amutha
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the morphology of the plant parts.
- To know the structure of various types of inflorescences, floral parts, and fruits.
- Basic knowledge about taxonomy and classification of angiosperm plants.
- To study about binomial nomenclature.
- To know about angiosperm families.
- To study the preparation of dichotomous key.
- To know about the useful plant parts and their uses.

Syllabus

UNIT 1 Morphology_ Modification of Root, Stem and Leaf. Leaf - Simple, Compound; Phyllotaxy; Inflorescence – Types; Flower- Floral parts; Fruits- Types.

UNIT 11 Principles of taxonomic Hierarchy (Order, Family, Genus and Species Level). Systems of classification (with merits and demerits) – Natural – Benthem aqnd Hooker system, Phylogenetic – Engler and Prantl System; Binomial nomenclature – ICBN, Dichotomous key, Preparation, Maintenance and significance of Herbarium.

UNIT 111 Critical study of the following Families and their Economic importance: Annonaceae, Sterculiaceae, Rutaceae, Caesalpiniaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Sapotaceae.

UNIT IV Convolvulaceae, Asclepiadaceae, Apocynaceae, Lamiaceae, Euphorbiaceae, Amaranthaceae, Liliaceae, Cannaceae and Poaceae.

UNIT V Binomial, Family, Useful part and Uses of the Following Plant Products: Fibres- Jute, Cotton and Hemp; Timber- Teak, Rosewood and Neem; Resin – Camphor and Canada balsam; Cosmeticsb- *Aloe*, Sandal wood Turmeric; Beverages – Tea, Coffee and *Cocoa*; Oil – Coconut oil, Eucalyptus oil and *Pongamia* oil; Fruits and Vegetables- Banana, Jackfruit, Pineapple; Medicinal plants – *Adatoda*, Clove and *Acorus calamus*

PRACTICALS:

1. Morphological identification of plant parts and their modifications.

2. Technical description of plant parts and dissection of floral parts of plants with reference to the families prescribed in the syllabus.

3. Field trips (minimum 2 days) to places under the guidance of teachers to study plants in their natural habitat and submit a report.

4. Preparation of dichotomous key.

5. Identify and comment on the useful plant parts or plants prescribed in the syllabus.

6. Preparation and submission of 10 herbarium sheets.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of morphology
2-L2	Brief account on root modification,
3- L3	Stem and Leaf modification.
4-P4	Practical
5-P5	Practical – Morphology modifications.
6-P6	Practical
7-L7	Brief account about phyllotaxy.
8- L1	Inflorescence.
9- L8	Fruits – Types.
10- L9	Taxanomical Hierarchy.
11-L10	Brief study about Natural classification.
12-P11	Practical

13-P12	Practical – Dissectout Annonaceae, Sterculiaceae.
14-P13	Practical
15-L14	Phylogenetic system of Classification.
16-L15	ICBN
17- L16	Dichotomous key preparation.
18-L17	Preparation steps of Herbarium
19- P18	Practical
20- P19	Practical – Dissectout Rutaceae and Caesalpiniaceae.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Annonaceae
25- L23	Sterculiaceae
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Cucurbitaceae
28- L26	Apiaceae
29- P27	Practical
30- P2	Practical – C Apiaceae, Covolvulaceae
31-P28	Practical
32-L29	Caesalpiniaceae
33-L30	Sapotaceae
34- L31	Rubiaceae
35- L32	Convolvulaceae
36- L33	Asclepiadaceae
37- P34	Practical
38-P35	Practical – Rubiaceae, Sapotaceae , Apocynaceae
39- P36	Practical
40- L37	Lamiaceae
41- L38	Euphorbiaceae
42-P3	Amaranthaceae
43- L39	Cannaceae
44- P40	Practical
45- P41	Practical – Euphorbiaceae, Asclepiadaceae
46- P42	Practical
47- L43	Liliaceae
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Uses of Fibres.
53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Lamiaceae, Cannaceae, Poaceae
56- L51	Practical

57- L52	Timber
58- L53	Resin
59-P4	**College level meeting/ function**
60- L54	Cosmatics
61- L55	Beverages
62- L56	Oil
63- L57	Fruits and vegetables
64- L58	Medicinal plants
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Amaranthaceae, Cannaceae, Liliaceae
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about angiospermic plants.
CO2	Know about angiospermic plants
CO3	Know about the different dicot and monocot plants.
CO4	To learn about different floral parts.
CO5	To know about different economic importance of plants.
CO6	To know about uses of various oils, timbers, bevarages etc.
CO7	To know about uses of medicinal plants.
CO8	To know about classification of plants.
CO9	To know about herbarium preparation.
Experimental Learning	
EL1	Know about dichotomous key preparation.
EL2	Know about how to idendify the dicot and monocot plants.
EL3	Know about taxonomical hierarchy.
EL4	Know about differentiation of floral parts.
Integrated Activity	
IA1	To visit different fields to study the plants in their natural habitat.
IA2	To attended two days study tour about Taaxonomy.

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Plant Physiology
Course Code	GMPB61
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. Mr. D. Abiya Chelliah
Credits	6
L. Hours /P. Hours	6 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the physiology of the plans.

- To know the structure of various types of stomata, chloroplast, and phytohormons .
- Basic knowledge about physiology and classification of macro nutrients and micronutrients.
- To study about C3, C4 and CAM pathways.
- To know about translocation of organic solutes.
- To study the transpiration pull and cohesion theory.
- To know about various phytohormones and their uses.

Syllabus

UNIT I

WaterRelationsof Plants&Transpiration: Water Relations: Imbibition, Diffusion and Osmosis; Water Potential- Definition, Components, Absorption of Water – Mechanism and Factors affecting Water Absorption; TranspirationDefinition, Types, Significance and Mechanism of Stomatal Transpiration- steps and theories, Guttation

UNIT II

Ascent of Sap&Mineral nutrition: Ascent of Sap –Definition, Path of Ascent of Sap, Mechanism- Transpiration Pull and Cohesion Theory.Mineral nutrition - Macro and Micro Nutrients-Absorption of Mineral Salts – Mechanism, Translocation of Organic Solutes - Mechanism of Phloem Transport (Munch‟s Mass flow hypothesis).

UNIT III

Photosynthesis&.Respiration: Photosynthesis:Light and Dark Reactions - Photosynthetic Electron Transport Chain and Photophosphorylation (Cylic and Non cyclic); Carbon Assimilation - C3, C4 and CAM Pathways andits Significance;Respiration: Glycolysis, TCA cycle and Oxidative Phosphorylation.

UNIT IV

Growth and Development: Growth Curve and phases of growth;Phytohormones:Physiological Effect and Practical Applications - Auxin, Gibberellic acid, Cytokinin, Ethylene and Abscisicacid;Photoperiodism and Vernalization.

UNIT V

Seed Dormancy: Causes and Methods ofBreaking Dormancy; Stress Physiology - Classification– Bioticand Abiotic, Stress Factors- Response of Plants to Salt, Drought, Frost and Heat

PRACTICALS

1. Water Potential by Gravimetric Method.

2. Water Potential by Falling Drop Method.

3. Osmotic Potential by Plasmolytic Method.

4. Rate of Photosynthesis in Different Concentrations of Bi-Carbonate – Bubble Method.

5. Measurement of Stomatal Index.

6. Effect of Temperature on Permeability of Plasma Membrane.

7. Separation of Chlorophyll Pigments by Ascending Paper Chromatography.

DEMONSTRATION: 1. Tissue Tension

2. Suction due to Transpiration

3. Ganong‟ sPhotometer

4. Fermentation

5. Arc Auxanometer

6. Clinostat

7. Phototropism

Spotters

1. Absorption Spectrum of Chlorophylls

2. Growth curve. To maintain a record note book.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of Imbibition
2-L2	Brief account on Diffusion,
3- L3	Osmosis , Water Potential and Water Absorption.
4-P4	Practical
5-P5	Practical – Water Potential by Gravimetric method
6-P6	Practical
7-L7	Brief account on Transpiration
8- L1	Mchanism of Stomatal Traspiration
9- L8	Significance of Transpiration.

10- L9	Ascent of sap
11-L10	Brief study about Path of Ascent of sap.
12-P11	Practical
13-P12	Practical – Water Potential by Falling Drop Method.
14-P13	Practical
15-L14	Study about Transpiration Pull Cohesion Thory.
16-L15	Mineral Nutrition
17- L16	Various types of Macronutrients.
18-L17	Different types of micronutruients.
19- P18	Practical
20- P19	Practical – Osmotic Potential by Plasmolytic Method.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Absorption of Mineral Salts.
25- L23	Study about Translocaton of Organic solutes.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Mechanism of Phloem Transport.
28- L26	Study about Light and Dark Reactions.
29- P27	Practical
30- P2	Practical – Quantitative Estimation of Total Chloophyll Content in Leaves.
31-P28	Practical
32-L29	Study about Electron Transport Chain.
33-L30	Photophosphorylation
34- L31	C3 Cycle
35- L32	C4 Cycle
36- L33	CAM Pathway.
37- P34	Practical
38-P35	Practical – Quantitative Estimation of Carotenoid Content in Flowers.
39- P36	Practical
40- L37	Photorespiration.
41- L38	Glycolysis
42-P3	TCA Cycle
43- L39	Study about Oxidative Phosphorylation
44- P40	Practical
45- P41	Practical – Rate of Photosynthesis in Different Concentrations of Bi-Carbonate-Bubble Method.
46- P42	Practical
47- L43	Study about Growth and Growth Curve
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Different Phases of Growth Curve.

53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Measurement of Stomatal Index.
56- L51	Practical
57- L52	Growth Hormones.
58- L53	Auxin and Gibberellic Acid
59-P4	**College level meeting/ function**
60- L54	Cytokinin, Ethylene and Absisic acid
61- L55	Various methods of Seed Dormancy and Breaking of Seed Dormancy.
62- L56	Stress Physiology
63- L57	Biotic and Abiotic Factors of Stress
64- L58	Differentiate Photoperiodism and Vernalization.
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Effect of Temperature on Permeability of Plasma Membrane.
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about Physiology of plants.
CO2	Know about absorption mechanism of plants.
CO3	Know about the different mechanism of Stomatal Transpiration in Plants.
CO4	To learn about differen kind of Photophosphorylations.
CO5	To know about Oxidative Phosphorylation..
CO6	To know about uses of Auxin, Gibbrellic Acid, Cytokinin etc.
CO7	To know about Photoperiodism and Vernalisation.
CO8	To know about Seed Dormancy.
CO9	To know about Stress Physiology.
Experimental Learning	
EL1	Know about Stomatal Index.
EL2	Know about how to Measure the Photosynthetic Rate.
EL3	Know about Stomatal Index.
EL4	Study about Water Potential.

Integrated Activity	
IA1	Study about Osmosis.
IA2	To study Tissue Tension.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Plant Anatomy and Micro Techniques
Course Code	SMBO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Meristems and theories of meristem tissue
- To discuss the type and function of simple and permanent tissue
- To explain the internal structure of moncot and dicot root stem and leaves
- To describe the normal and secondary thickening in dicot stem and root
- To illustrate the Nodal anatomy
- To describe the principles of Microscope.
- To describe the working nature of Light and Electron Microscope (TEM only)
- Explain types of staining techniques and Maceration techniques

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core – I
PLANT ANATOMY AND MICRO TECHNIQUES
(4 hrs/week)

UNIT –I **12Hrs**

Meristems – Characteristics of meristematic tissues – Types, functions and Theories of meristems. Structure and functions of simple and permanent tissues – parenchyma, collenchyma, sclerenchyma, xylem and phloem.

UNIT – II **12Hrs**

Structure of dicot stem and root, structure of monocot stem and root, structure of dicot and monocot leaves.

UNIT – III **12Hrs**

Normal secondary thickening in dicot stem and root, anomalous secondary growth in the stem of *Boerhaavia*and *Dracaena*.

UNIT – IV **12Hrs**

Nodal anatomy: Types of nodes – unilocular, trilocular and multilocular; leaf traces and leaf gaps; epidermal tissue system: stomatal types, hair, trichomes and glands.

UNIT – V **12Hrs**

Microscopy: Principle and working of simple and compound light microscopes and electron microscope (TEM only). Micro techniques – simple staining, double staining and preparation of permanent slides – Maceration

PRACTICALS:

1. To observe and identify the following slides showing
    a. Meristems – shoot apex and root apex
    b. Simple tissues
    c. Xylem elements
2. Primary structure of stem, root and leaves of dicot and monocot plant.
3. Normal secondary thickening in dicot stem and root.
4. Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
5. Maceration technique (Xylem elements only)
6. Demonstration: Preparation of double stained permanent slides.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Meristems – Characteristics of meristematic tissues
2-L2	Theories of meristems
3- L3	Types and functions of meristems
4-L4	Structure and functions of simple Tissue
5-L5	Structure and functions of parenchyma, collenchymas and sclerenchyma
6-L6	Structure and functions of Permanent tissue
7-L7	Structure and functions of xylem
8-L8	Structure and functions of phloem.
9-L9	UNIT II, Structure of dicot stem
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Structure of dicot root
12-L11	Structure of monocot stem
13-L12	Structure of monocot root
14-L13	Structure of dicot leaves.
15-L14	Structure of monocot leaves.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Explain the Secondary Thickening
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Secondary Thickening in dicot stem
21-P2	**College level meeting / Cell function**
22-L19	Explain the Secondary Thickening in dicot root
23-L20	Explain the process of secondary thickening
24-L21	Describe the concept of Cambium formation
25-L22	Analysis the role of secondary tissue formation
26-L23	Determine the functions of secondary tissue

27-L24	Explain the concept of anomalous Secondary growth
28-L25	Explain the anomalous Secondary growth in *Boerhaavia*
29-L26	Explain the anomalous Secondary growth in *Dracaena*
30-L27	UNIT IV, Explain what is Nodal anatomy
31-L28	To give an account on node and Types of node
32-L29	Unilocular node, Trilocular node, multilocular node, Leaf traces and Leaf gaps
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Epidermal Tissue system - Stomatal types, Epidermal Hair and Trichomes
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Working Principles of simple Microscope
39-L34	Working Principles of compound light Microscope
40-L35	Working Principles of Electron Microscope (TEM only)
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Micro Technique – Simple staining
44-L38	Micro Technique – Double staining
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Permanent slide
47-L41	Maceration
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Microscopy Techniques
50-L44	Recall the Micro Techniques (Simple staining, Double staining, Preparation of Permanent slide and Maceration
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To know the concept of Meristems and theories of meristem tissue
CO2	To know the type and function of simple and permanent tissue
CO3	To know the internal structure of moncot and dicot root stem and leaves
CO4	To know the normal and secondary thickening in dicot stem and

	root
CO5	To know the Nodal anatomy
CO6	To know the principles of Microscope.
CO7	To know the working nature of Light and Electron Microscope (TEM only)
CO8	To know types of staining techniques
CO9	To know the Maceration techniques
Experimental Learning	
EL1	To know the internal structure of meristems and simple tissue
EL2	Primary structure of stem, root and leaves of dicot and monocot plant.
EL3	Normal secondary thickening in dicot stem and root.
EL4	Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
EL5	Maceration technique (Xylem elements only) and Demonstration: Preparation of double stained permanent slides.
Integrated Activity	
IA1	Prepare model of Xylem elements
IA2	Preparation of double stained permanent slides for Dicot stem and root

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Algae and Bryophytes
Course Code	SMBO12
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Plant Diversity and Medicinal Botany
Course Code	SABO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Fungi, Plant Pathology and Lichenology
Course Code	SMBO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To recognize the General characteristic feature of Fungi
- To explain the classification of fungi
- To understand the economic importance of Fungi
- To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
- To understand the plant diseases
- To recognize the General characteristic feature of Lichen
- To explain the classification of Lichen
- To understand the economic importance of Lichen
- To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 3

FUNGI, PLANT PATHOLOGY AND LICHENOLOGY (4 hrs/week)

UNIT I **12Hrs**

General characters and classification of fungi based on Alexopoulous (1962). occurrence, systematic position, structure, reproduction and life cycle of Albugo and Mucor.

UNIT II **12Hrs**

Occurrence, systematic position, structure, reproduction and life cycle of Peziza and Puccinia. Economic importance of fungi: Role of fungi in medicine, industry, agriculture, food and food products.

UNIT III **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Tikka disease of groundnut, Red rot of sugarcane; Paddy blast.

UNIT IV **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Citrus canker, Bunchy top disease of Banana and Tobacco Mosaic viral disease.

UNIT V **12Hrs**

Lichens: General account, types and economic importance of Lichens. Structure and reproduction with special reference to *Usnea.*

PRACTICALS

1. Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.

2. Spotters:

i. Slides - *Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus and Teleutosorus

ii. Disease infected leaves showing Albugo and Puccinia; Usnea habit

iii. Observe and identify the following Plant diseases.

a. Tikka disease of Groundnut

b. Red Rot of Sugarcane

c. Paddy Blast

d. Citrus Canker

e. Bunchy Top of Banana

f. Tobacco Mosaic Viral disease

5. Maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I,** General characters of fungi
2-L2	Classification of fungi based on Alexopoulous (1962).
3- L3	occurrence, systematic position Albugo
4-L4	Structure Albugo
5-L5	Reproduction Albugo
6-L6	life cycle of Albugo
7-L7	occurrence,
8-L8	systematic position of Mucor.
9-L9	Structure of Mucor.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Reproduction of Mucor.
12-L11	life cycle of Mucor.
13-L12	**UNIT II** Occurrence, systematic position, structure, reproduction and life cycle of Peziza
14-L13	Occurrence, systematic position, structure, reproduction and life cycle of Puccinia.
15-L14	Economic importance of fungi
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	**UNIT III,** Introduction to plant diseases
	Entering Internal Test-I Marks into University portal
20-L18	Tikka disease of groundnut with special reference to the symptoms, etiology, dissemination and control measures.
21-P2	**College level meeting / Cell function**
22-L19	Red rot of sugarcane with special reference to the symptoms
23-L20	Red rot of sugarcane with special reference to etiology and dissemination
24-L21	Red rot of sugarcane with special reference to control measures:
25-L22	Paddy blast with special reference to the symptoms and etiology
26-L23	Dissemination and control measures of Paddy blast
27-L24	**UNIT IV** Citrus canker disease with special reference to the symptoms
28-L25	Citrus canker with special reference to etiology and dissemination
29-L26	Bunchy top disease of Banana with special reference to the symptoms
30-L27	Bunchy top disease of Banana with special reference to etiology and dissemination
31-L28	Tobacco Mosaic viral disease with special reference to the symptoms
32-L29	Tobacco Mosaic viral disease with special reference to etiology and dissemination
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	**UNIT V** Lichens: General account,
36-L32	**Allotting portion for Assignment/seminar**

37-IT-II	**Internal Test-II**
38-L33	Types of Lichen.
39-L34	Economic importance of Lichens
40-L35	Occurrence of *Usnea.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Systematic position of *Usnea.*
44-L38	Structure of *Usnea.*
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Reproduction of *Usnea.*
47-L41	Economic importance of *Usnea.*
48-L42	**Allotting portion for Internal Test-III**
49-L43	Economic importance of Lichen
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "**Fungi, Plant Pathology and Lichenology**"
CO1	To recognize the General characteristic feature of Fungi
CO2	To explain the classification of fungi
CO3	To understand the economic importance of Fungi
CO4	To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
CO5	To understand the plant diseases
CO6	To recognize the General characteristic feature of Lichen
CO7	To explain the classification of Lichen
CO8	To understand the economic importance of Lichen
CO9	To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen
Experimental Learning	
EL1	To know the Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.
EL2	*Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus

	and Teleutosorus.
EL3	Prepare the permanent slide
EL4	Preserve the plant Disease
Integrated Activity	
IA1	Prepare the permanent slide
IA2	Preserve the plant Disease

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Cell Biology & Embryology of Angiosperms
Course Code	SMBO 22
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of prokaryotic and eukaryotic cell
- To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
- Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
- Structure of Microsporoangium, Megasporogenesis
- To understand the Double fertilization process

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 4

CELL BIOLOGY & EMBRYOLOGY OF ANGIOSPERMS (4 hrs/week)

UNIT I Cell Biology: Structure of a Plant cell – prokaryotic and eukaryotic cell, structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.

UNIT II Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.

UNIT III Non-living inclusions - cystolith, raphides, starch grains. Cell Division: Mitosis and Meiosis.

UNIT IV Embryology : Structure of Microsporoangium, microsporogenesis, development of male gametophyte. Types and structure of megasporangium, Megasporogenesis, development of female gametophyte, Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type

UNIT V Double fertilization, types of endosperm – nuclear, cellular and helobial; Ruminate endosperm.Structure and Development of dicot embryo (Capsella) and Polyembryony.

PRACTICALS

Cell Biology

1. Mitosis using Onion roots.
2. Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
3. Non-living inclusions – Starch grains, Cystolith and Raphides.

Embryology of Angiosperms

1. Dissect out any one stage of embryo.
2. Identification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony
3. Specimen – Ruminate endosperm

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I** Introduction about Cell Biology
2-L2	Structure of a Plant cell
3- L3	Structure of prokaryotic and eukaryotic cell
4-L4	structure of cell wall
5-L5	Functions of cell wall
6-L6	Structure of plasma membrane
7-L7	Functions of plasma membrane
8-L8	Structure and Functions of endoplasmic reticulum
9-L9	Structure and Functions of ribosome.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II Structure of Mitochondria
12-L11	Functions of Mitochondria
13-L12	Structure and functions of Chloroplast
14-L13	Structure and functions of Nucleus
15-L14	Structure and functions of Chromosome.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Non-living inclusions Introduction
	Entering Internal Test-I Marks into University portal

20-L18	Cystolith
21-P2	**College level meeting / Cell function**
22-L19	Raphides
23-L20	Starch grains
24-L21	Cell Division Introduction
25-L22	Mitosis
26-L23	Meiosis. I
27-L24	Meiosis. II
28-L25	UNIT IV, Embryology Introduction
29-L26	Structure of Microsporoangium
30-L27	Microsporogenesis
31-L28	Development of male gametophyte
32-L29	Types and structure of megasporangium
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Development of female gametophyte
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type
39-L34	UNIT V, Double fertilization
40-L35	Types of endosperm
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Nuclear and Cellular endosperm
44-L38	Helobial endosperm
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Ruminate endosperm
47-L41	Development of dicot embryo
48-L42	**Allotting portion for Internal Test-III**
49-L43	Polyembryony.
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Cell Biology & Embryology of Angiosperms"
	To understand the concept of prokaryotic and eukaryotic cell
CO1	To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
CO2	Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
CO3	Structure of Microsporoangium, Megasporogenesis
CO4	To understand the Double fertilization process
Experimental Learning	
EL1	Mitosis using Onion roots.
EL2	Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
EL3	Non-living inclusions – Starch grains, Cystolith and Raphides.
EL4	dentification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony Ruminate endosperm
Integrated Activity	
IA1	Prepare of Nucleus
IA2	Fixing of Mitosis using Onion roots.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

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St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Embryology, Plant Anatomy, Physiology and Biotechnology
Course Code	SABO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Structure and development of microsporangium and megasporangium.
- To explain the concept of Double fertilization,
- To explain the Meristem - Structure and classification
- To know the function of simple and complex tissue
- To Explain the Photosynthesis
- To understand the process of Transpiration Absorption of water Ascent of sap
- To know the Tissue Culture – Scope and importance
- Mass culture of Nostoc and Yeast

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester-II / Allied –II

Semester II/IV

EMBRYOLOGY, PLANT ANATOMY, PHYSIOLOGY AND BIOTECHNOLOGY
4hrs/week

UNIT – I Structure and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.

UNIT – II Meristem - Structure and classification. Simple tissues, complex tissues; Primary structure of Dicot and Monocot stem and root; Structure of leaf; Normal secondary thickening in dicot stem.

UNIT – III Absorption of water – diffusion, osmosis, imbibition, mechanism of absorption of water; Ascent of sap – (cohesion theory only); Transpiration – Types, Mechanism of stomatal transpiration (Starch – sugar hypothesis); Photosynthesis importance of photosynthesis, Mechanism of Photosynthesis – Light and dark reaction (Calvin cycle).

UNIT – IV Nostoc - Morphology, Use as Biofertilizerand Mass cultivation; Structure,multiplication (budding and fission) and Mass culture of Yeast.

UNIT – V Tissue Culture – Scope and importance - totipotency, Nutrient media(M.S medium) Callus and Meristem Culture; Applications of plant tissue culture.

PRACTICAL – 2

1) Dissect out young embryo from Tridax flower bud.

2) Make suitable micro-preparations of dicot and monocot stem, root

3) Demonstrate the physiology experimental set up –Potato osmoscope, Ganong's light screen, Bell jar experiment

4)) Identify the Photograph/ Slide/ Specimen/setup

(i) Nostoc

(ii) Yeast

(iii) Callus culture,

(iv) Meristem culture.

6) Maintain a record note book for external and internal evaluation

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Structure of microsporangium and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.
2-L2	Development of microsporangium
3- L3	Structure and types of megasporangium
4-L4	development of megasporangium
5-L5	Development of male gametophyte

6-L6	Development of female gametophyte
7-L7	Double fertilization
8-L8	Endosperm – types.
9-L9	Structure of dicot embryo.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II II Meristem - Structure and classification
12-L11	Simple tissues, complex tissues
13-L12	Monocot stem and root
14-L13	Dicot stem and root
15-L14	Normal secondary thickening in dicot stem.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Absorption of water – diffusion
	Entering Internal Test-I Marks into University portal
20-L18	Osmosis and imbibition
21-P2	**College level meeting / Cell function**
22-L19	mechanism of absorption of water; Ascent of sap – (cohesion theory only)
23-L20	Transpiration – Types
24-L21	Mechanism of stomatal transpiration (Starch – sugar hypothesis);
25-L22	Importance of photosynthesis
26-L23	Mechanism of Photosynthesis
27-L24	Light and dark reaction (Calvin cycle).
28-L25	Light and dark reaction (Calvin cycle).
29-L26	Light and dark reaction (Calvin cycle).
30-L27	**UNIT IV** Nostoc - Morphology,
31-L28	Use as Biofertilizer
32-L29	Structure and multiplication (budding and fission) of Yeast
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Mass culture of Yeast.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Tissue Culture Introduction
39-L34	Tissue Culture – Scope
40-L35	Tissue Culture –importance
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Totipotency
44-L38	Nutrient media(M.S medium)
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Callus Culture
47-L41	Meristem Culture
48-L42	**Allotting portion for Internal Test-III**
49-L43	Applications of plant tissue culture.
50-L44	Applications of plant tissue culture.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Embryology, Plant Anatomy, Physiology and Biotechnology"
CO1	To understand the Structure and development of microsporangium and megasporangium.
CO2	To explain the concept of Double fertilization,
CO3	To explain the Meristem - Structure and classification
CO4	To know the function of simple and complex tissue
CO5	To Explain the Photosynthesis
CO6	To understand the process of Transpiration Absorption of water Ascent of sap
CO7	To know the Tissue Culture – Scope and importance
CO8	Mass culture of Nostoc and Yeast
Experimental Learning	
EL1	Make suitable micro-preparations of dicot and monocot stem
EL2	Demonstrate the physiology experimental set up –Potato osmoscope
EL3	Ganong's light screen, Bell jar experiment
EL4	(i) Nostoc (ii) Yeast (iii) Callus culture, (iv) Meristem culture.
Integrated Activity	
IA1	Preserve the permanent slide for Mocot , dicot stem and root
IA2	Preparation of mass culture of Yeast and Nostoc

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Organic Farming
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mr. V.K Stanley Raja 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the soil Profile
- To discuss the Organic Matter
- To explain the Soil Air and water
- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
- To explain the Green Manure: Plant wastes
- To explain the Biofertilizers
- Explain the Vermicomposting:

MSU/2017-18/ B. Sc Botany / Semester –III
Skill Based Subject -I (B) ORGANIC FARMING (4hrs/week)

Unit –I **(11hr)**
Soil Science: Brief Account of Soil Profile, Fertility of Soil – Importance of Organic Matter – Water Retentivity and Aeration of Soil.

Unit – II: **(12hr)**
Manure and Manuring: Organic Manure, Types, Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.

Unit – III **(10 hr)**
Green Manure: Plant wastes – Fallen leaves and Twigs, Humus Formation, Green Manuring, Mulching - Leaves of Trees like Pongamia, Gliricidia ,Azadirachta,andCalotropis, Compost making.

Unit-IV **(13hr)**

Biofertilizers: Rhizobium-Importance, Mass Production and Application, VAM Fungi – Importance, Mass production and Applications.

Unit–V **(14hr)**

Vermicomposting: Importance, Application and Production of Vermicompost, Preparation and importance of Panchagavyaas foliar spray

PRACTICALS:

13. To make suitable micro preparations of the following: Lycopodium Stem,
    Adiantum Stipe,
    Marsilea Petiole,
    Rhizome and Sporo carp.
    Pinus Stem and Needle,
    Gnetum Stem and Leaf.
14. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

    Paleobotany (Slide):
    Rhynia stem
    Lepidodendron stem
    Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Soil Science: Introduction
2-L2	Brief Account of Soil Profile
3- L3	Fertility of Soil
4-L4	Importance of Organic Matter
5-L5	Water Retentivity
6-L6	Aeration of Soil.
7-L7	UNIT II Manure and Manuring: Introduction, , Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
8-L8	Organic Manure
9-L9	Organic Manure Types
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Animal Wastes – Cattle Dung and Urine
12-L11	Poultry Wastes
13-L12	Slaughter Wastes
14-L13	Piggery Wastes
15-L14	Fishery Wastes
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**

18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III Green Manure: Plant wastes
	Entering Internal Test-I Marks into University portal
20-L18	Plant wastes – Fallen leaves and Twigs
21-P2	**College level meeting / Cell function**
22-L19	Humus Formation
23-L20	Green Manuring
24-L21	Mulching - Leaves of Trees like Pongamia
25-L22	Mulching - Leaves of Trees like Gliricidia
26-L23	Azadirachta
27-L24	Calotropis
28-L25	Compost making
29-L26	Biofertilizers: Rhizobium-Importance
30-L27	Mass production of VAM
31-L28	Mass production of VAM
32-L29	Applications of VAM
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Vermicomposting:
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Importance of Vermicomposting
39-L34	Vermiculture
40-L35	Production of Vermicompost Indoor
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Production of Vermicompost Out door
44-L38	Preparation of Panchagavyaas
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Panchagavyaas
47-L41	Application of Panchagavyaas
48-L42	**Allotting portion for Internal Test-III**
49-L43	Dosage of Panchagavyaas
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the soil Profile
CO2	➢ To discuss the Organic Matter
CO3	➢ To explain the Soil Air and water
CO4	➢ To Discuss the Stelar Evolution in Pteridophytes.
CO5	➢ To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
CO6	➢ To explain the Green Manure: Plant wastes
CO7	➢ To explain the Biofertilizers
CO8	➢ Explain the Vermicomposting:

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	SMBO 31
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the general character of Pteridophytes
- To discuss the classification of Pteridophytes
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea

- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character of Gymnosperms
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
- Economic importance of Gymnosperms
- Explain the Geological Time Scale

MSU/2017-2018/B.Sc. Botany/Semester-III/Core Paper – 5

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY (4hrs/week)

UNIIT I **(12L)**

Pteridophytes: General Characteristics and Classification of Pteridophytes (Sporne 1966), Psilotum and Lycopodium: Distribution, Systematic Position, Structure, Reproduction and Life History (need not study the development of gametophyte, sex organs and sporophyte).

UNIT II **(11L)**

Adiantum, Marsilea: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle (need not study the development of gametophytes, sex organ and sporophyte), Stelar Evolution in Pteridophytes.

UNIT III **(13L)**

Gymnosperms: General Characteristics and Classification of Gymnosperms (David Bierhorst, 1971), Pinus: Distribution, Systematic Position, Structure, Reproduction and Life History

UNIT IV **(14L)**

Gnetum: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of (need not study the Development of Sex Organs and Sporophyte). Economic Importance of Gymnosperms.

UNIT V **(10L)**

Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.

PRACTICALS:

15. To make suitable micro preparations of the following: Lycopodium Stem,
    Adiantum Stipe,
    Marsilea Petiole,
    Rhizome and Sporo carp.
    Pinus Stem and Needle,
    Gnetum Stem and Leaf.
16. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

    Paleobotany (Slide):
    Rhynia stem
    Lepidodendron stem
    Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Pteridophytes: General Characteristics
2-L2	Classification of Pteridophytes (Sporne 1966)
3- L3	Distribution, Systematic Position of Lycopodium
4-L4	Structure of Lycopodium
5-L5	Reproduction and Life History of Lycopodium
6-L6	Unit II Occurrence of Adiantum
7-L7	Distribution, Systematic Position of Adiantum
8-L8	Structure of Adiantum

9-L9	Reproduction and Life History of Adiantum
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Occurrence of Marsilea
12-L11	Distribution, Systematic Position of Marsilea
13-L12	Structure of Marsilea
14-L13	Reproduction and Life History of Marsilea
15-L14	Unit III Gymnosperms: General Characteristics
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Classification of Gymnosperms
	Entering Internal Test-I Marks into University portal
20-L18	Distribution, Systematic Position of Pinus
21-P2	**College level meeting / Cell function**
22-L19	Structure of Pinus
23-L20	Reproduction of Pinus
24-L21	Reproduction of Pinus
25-L22	Life History of Pinus
26-L23	UNIT IV Gnetum: Occurrence
27-L24	Systematic Position of Gnetum
28-L25	Structure of Gnetum
29-L26	Reproduction of Gnetum
30-L27	Life Cycle of of Gnetum
31-L28	Economic Importance of Gymnosperms
32-L29	Revision of IV Unit
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Geological Time Scale
39-L34	Methods of Fossilization
40-L35	Methods of Fossilization
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Brief Study of Rhynia
44-L38	Brief Study of Rhynia
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Brief Study of Lepidodendron
47-L41	Brief Study of Lepidodendron
48-L42	**Allotting portion for Internal Test-III**
49-L43	Brief Study of Lyginopteris.
50-L44	Brief Study of Lyginopteris.
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**

54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To understand the general character of Pteridophytes
CO2	To discuss the classification of Pteridophytes
CO3	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea
CO4	To Discuss the Stelar Evolution in Pteridophytes.
CO5	To understand the general character of Gymnosperms
CO6	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
CO7	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
CO8	Economic importance of Gymnosperms
CO9	Explain the Geological Time Scale
Experimental Learning	
EL1	micro preparations of the following: Lycopodium Stem, Adiantum Stipe, Marsilea Petiole, Rhizome and Sporo carp. Pinus Stem and Needle,
EL2	To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.
EL3	Paleobotany (Slide): Rhynia stem Lepidodendron stem Lyginopteris stem.
Integrated Activity	
IA1	Prepare Permanent Slide for Pinus
IA2	Prepare Permanent Slide Marsilea

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature

Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Microbiology and Techniques In Biology
Course Code	SMBO41
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. V.K. Stanley Raja 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Microbiology
- To discuss the Five Kingdom Classification
- To explain the Gram Staining
- To describe the Virus and Bacteriophage
- To illustrate the Bacterio flora in Milk
- To describe the principles of Microscope.
- To describe the working nature of UV Spectrometer, MRI, ECG

MSU/2017-18/ B. Sc Botany/ Semester –IV /Core paper-6

MICROBIOLOGY AND TECHNIQUES IN BIOLOGY (4hrs/week)

UNIIT I (13L)

Microbiology: Brief History and Development, Classification of Microorganisms (Whittaker‟s Five Kingdom Concept), Bacteria - Outline of Classification (Bergey‟smanual), Ultra Structure, Nutritional Types and Reproduction of Bacteria, Media Preparation and Pure Culture techniques of Bacteria, Staining Technique - Gram Staining.

UNIT II (12L)

Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.

UNIT III (12L)

Microbes: Microbes in Food Production, Spoilage, Poisoning and Preservation. Bacteria Flora in Milk, Pasteurization of Milk and Milk Products, Bacterial Pathogens and Water Pollution, Drinking Water as a Vehicle of Diseases, Purification of water.

UNIT IV (11L)

Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.

UNIT V (12L)

Electrophoresis: Basic principles, electrophoretic mobility, factors, isoelectric focusing. Types- vertical and horizontal agarose and poly acrylamide gel electrophoresis, detection and recovery of electrophorogram. Gel documentation system. X-ray crystallography.

PRACTICALS

1. Preparation of Culture Media for Bacteria.

2. Preparation of Serial Dilution.

3. Isolation of Bacteria – Streak Plate Method

4. Identify the type of Bacteria using Gram Staining.

5. Analysis of Milk – Methylene Blue Dye Reduction Test.

6. Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Microbiology: Brief History
2-L2	Development of Microbiology
3- L3	Classification of Microorganisms (Whittaker‟s Five Kingdom Concept)
4-L4	Bacteria - Outline of Classification
5-L5	Bacteria - Outline of Classification
6-L6	Ultra Structure of Bacteria
7-L7	Nutritional Types of Bacteria
8-L8	Reproduction of Bacteria
9-L9	Media Preparation and Pure Culture techniques of Bacteria,
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Staining Technique - Gram Staining.

12-L11	UNIT II Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.
13-L12	Structure of HIV
14-L13	Reproduction of HIV
15-L14	T4 Bacteriophages, Viroids, Virions and Mycoplasma
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Transmission of Viruses and Purification of Viruses.
	Entering Internal Test-I Marks into University portal
20-L18	UNIT III
21-P2	**College level meeting / Cell function**
22-L19	Microbes: Microbes in Food Production
23-L20	Spoilage,
24-L21	Poisoning
25-L22	Preservation
26-L23	Bacteria Flora in Milk
27-L24	Pasteurization of Milk and Milk Products
28-L25	Bacterial Pathogens
29-L26	Water Pollution, Drinking Water as a Vehicle of Diseases
30-L27	Purification of water.
31-L28	UNIT IV, Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.
32-L29	Instruments: Principles, Working Mechanism and Applications of UV Spectrometer
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Instruments: Principles, Working Mechanism and Applications of Centrifuge
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Instruments: Principles, Working Mechanism and Applications of ECG
39-L34	Instruments: Principles, Working Mechanism and Applications of MRI
40-L35	Instruments: Principles, Working Mechanism and Applications of Positron emission tomography.
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Electrophoresis: Basic principles,
44-L38	electrophoretic isoelectric focusing
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Types- vertical and horizontal agarose
47-L41	Acrylamide gel electrophoresis
48-L42	**Allotting portion for Internal Test-III**
49-L43	Detection and recovery of electrophorogram.
50-L44	X-ray crystallography.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the concept of Microbiology
CO2	➢ To discuss the Five Kingdom Classification
CO3	➢ To explain the Gram Staining
CO4	➢ To describe the Virus and Bacteriophage
CO5	➢ To illustrate the Bacterio flora in Milk
CO6	➢ To describe the principles of Microscope.
CO7	➢ To describe the working nature of UV Spectrometer, MRI, ECG
Experimental Learning	
EL1	Preparation of Culture Media for Bacteria.
EL2	2. Preparation of Serial Dilution.
EL3	3. Isolation of Bacteria – Streak Plate Method
EL4	4. Identify the type of Bacteria using Gram Staining.
EL5	5. Analysis of Milk – Methylene Blue Dye Reduction Test.
	Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.
Integrated Activity	
IA1	Prepare the gram Staining for the given Bacterial Culture
IA2	Isolation of Bacteria – Streak Plate Method

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Preservation of fruits and vegetables
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. S.Darwin 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
- To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
- To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
- To describe the Sauce, Pickles & Ketchup
- To illustrate the Canning of Fruits& Vegetables

MSU/2017-18/ B. Sc Botany / Semester –III Skill Based Subject -I (A)
PRESERVATION OF FRUITS AND VEGETABLES (4hrs/week)

Unit-I (11L)

Fruits and Vegetables: Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.

Unit-II (13L)

Principles of Preservation: Importance and Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.

Unit-III (13L)

Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.

Unit- IV (11 L)

Preparation of Chutney, Sauce, Pickles & Ketchup: Preparation of Chutney- Mango, Sauce – Tomato,Pickles- Lime, Mango and Garlic, KetchupTomato. Drying of fruits: Banana, Mango, Grapes and Fig.

Unit- V (12 L)

Canning of Fruits& Vegetables: Mango and Banana; Tomato, Carrot, Bean and Mushrooms.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	Fruits and Vegetables: Nutritive values
2-L2	factors affecting storage of Fruits
3- L3	factors affecting storage of Vegetables
4-L4	Spoilage of fruits - microbial, enzymatic and insects.
5-L5	Spoilage of vegetables - microbial, enzymatic and insects.
6-L6	Unit II Principles of Preservation
7-L7	Importance of Preservation
8-L8	Methods of Preservation
9-L9	Refrigeration
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Freezing
12-L11	Canning,
13-L12	Drying
14-L13	Dehydration
15-L14	Chemical preservatives.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis**-
19-L17	UNIT III Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
	Entering Internal Test-I Marks into University portal
20-L18	Methods of preparation of Fruit Juice- Orange,
21-P2	**College level meeting / Cell function**
22-L19	Squashes- grape
23-L20	Squashes- Pine apple
24-L21	Jam - Tomato
25-L22	Jam - Mixed Fruit
26-L23	Jellies- Guava
27-L24	UNIT Preparation of Chutney.
28-L25	Drying of fruits

29-L26	Sauce
30-L27	Pickles
31-L28	Ketchup
32-L29	Preparation of Chutney- Mango
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Pickles- Lime
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Pickles Mango
39-L34	Pickles Garlic
40-L35	Drying of fruits
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Drying of fruits: Banana
44-L38	Drying of fruits: Mango
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Drying of fruits: Grapes
47-L41	Drying of fig
48-L42	**Allotting portion for Internal Test-III**
49-L43	Clarifying the doubts in the Syllabus
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
CO2	➢ To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
CO3	➢ To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit ,

	Jellies- Guava.
CO4	➢ To describe the Sauce, Pickles & Ketchup
CO5	➢ To illustrate the Canning of Fruits& Vegetables

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Biotechnology and Genetic Engineering
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. D. Abiya Chelliah
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the principle of Tissue Culture Laboratory
- To know the Meristem Culture and Artificial Seed.
- Basic knowledge about Techniques of genetic engineering
- To know about Identification of Recombinants
- To explain the concept of DNA transfer techniques.

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 1A

BIOTECHNOLOGY AND GENETIC ENGINEERING (5hrs/week)

UNIT1 (15L)

Tissue Culture: Introduction, definition, history, scope and importance of plant tissue culture, Totipotency of cells, Tissue culture laboratory- organization and requirements, Sterilization techniques, Nutrient media- composition and preparation.

UNIT 11 (14L)

Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Protoplast isolation, fusion, selection of hybrids and regeneration.Cybrids– production and applications, Artificial seed: production, advantages and disadvantages.

UNIT 111 (16L)

Techniques of genetic engineering: Isolation of specific genes, enzymes used in gene cloning, Cloning Vectors - Plasmids,Cosmids and Phagemids,cDNALibraries,Agrobacterium mediated gene transfer in plants,GM plants – BtBrinjal, Bt Cotton, Golden rice. Bioethical issues.

UNIT 1V (16L)

Identification of Recombinants: Insertional inactivation, Immunochemical Method and Colony Hybridization Technique.Selection of Recombinant using Selective Medium and reporter genes, Blotting Techniques – Southern, Northern and Western Blotting.

UNIT V (14L)

Mutagenesis& DNA transfer techniques: Site directed mutagenesis and random mutagenesis; DNA transfer techniques: Physical method Microinjection, Chemical method-Calcium phosphate method, Electrical method Electroporation, Natural-Conjugation and bacterial transformation.

Spotters/Photographs

i. Callus culture from Carrot Explant.

ii. Protoplast Isolation. ‘iii. Plasmids – Ti plasmids iv. Gene cloning in E. Coli. v. Agrobacterium mediated gene transfer. vi. Blotting Techniques.

vii. Colony Hybridization technique. viii. Transgenic Plants prescribed in the syllabus. To maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Tissue Culture: Introduction,
2-L2	Definition of Tissue Culture
3- L3	history, scope and importance of plant tissue culture
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Totipotency of cells
8- L1	Tissue culture laboratory- organization
9- L8	Tissue culture laboratory requirements
10- L9	Sterilization techniques
11-L10	.Protoplast Isolation
12-P11	Protoplast Isolation
13-P12	Protoplast Isolation
14-P13	Practical
15-L14	Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Artificial seed: production, advantages and disadvantages.
16-L15	Protoplast isolation, fusion, selection of hybrids and regeneration.
17- L16	Cybrids– production and applications,
18-L17	Artificial seed: production
19- P18	Plasmids – Ti plasmids
20- P19	Plasmids – Ti plasmids
21-P20	Plasmids – Ti plasmids
	Internal Test I begins
22- L21	Artificial seed: production, advantages and disadvantages
23- IT-1	**Internal Test-I**
24- L22	Artificial seed: production, advantages and disadvantages
25- L23	Classification of amino acids.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Techniques of genetic engineering:
28- L26	enzymes used in gene cloning
29- P27	Gene cloning in E. Coli.
30- P2	Gene cloning in E. Coli.
31-P28	Gene cloning in E. Coli.
32-L29	Cloning Vectors - Plasmids

33-L30	Cosmids and Phagemids
34- L31	cDNALibraries
35- L32	Agrobacterium mediated gene transfer in plants
36- L33	GM plants – Bt Brinjal, Bt Cotton, Golden rice. Bioethical issues.
37- P34	Agrobacterium mediated gene transfer. vi. Blotting Techniques
38-P35	Agrobacterium mediated gene transfer. vi. Blotting Techniques
39- P36	Agrobacterium mediated gene transfer. vi. Blotting Techniques
40- L37	Golden rice.
41- L38	Golden rice.
42-P3	Bioethical issues.
43- L39	Bioethical issues.
44- P40	Identification of Recombinants: Insertional inactivation, Blotting Techniques – Southern, Northern and Western Blotting.
45- P41	Immunochemical Method and Colony Hybridization Technique
46- P42	Selection of Recombinant using Selective Medium and reporter genes
47- L43	Blotting Techniques – Southern
	Internal Test II begins
48- L44	Blotting Techniques –Northern and Western Blotting
49-IT-II	**Internal Test-II**
50-L45	Blotting Techniques Western Blotting
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Mutagenesis& DNA transfer techniques: Natural-Conjugation and bacterial transformation.
53- P48	Site directed mutagenesis and random mutagenesis;
54- P49	Site directed mutagenesis and random mutagenesis;
55- P50	DNA transfer techniques: Physical method Microinjection
56- L51	Practical
57- L52	Bioenergetics of Chloroplast
58- L53	Mitochondria,
59-P4	**College level meeting/ function**
60- L54	Chemical method-Calcium phosphate method
61- L55	Electrical method Electroporation,
62- L56	Natural-Conjugation and bacterial transformation
63- L57	Natural-Conjugation and bacterial transformation
64- L58	Natural-Conjugation and bacterial transformation
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper**

	discussion
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	➢ To know the principle of Tissue Culture Laboratory
CO2	➢ To know the Meristem Culture and Artificial Seed.
CO3	➢ Basic knowledge about Techniques of genetic engineering
CO4	➢ To know about Identification of Recombinants
CO5	➢ To explain the concept of DNA transfer techniques.
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Horticulture and plant Breeding
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Mr. V.K Stanley Raja
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the Scope, importance and divisions of Horticulture
- To know the : Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components
- Basic knowledge Kitchen garden: Establishment, Organic manures and growth regulators in horticulture,
- To know about Plant Breeding Nature, Scope and Objectives
- To explain the concept of Mutation breeding: Procedure and practices, Mutagens

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 2A

HORTICULTURE & PLANT BREEDING (5hrs/week)

UNIT - I (14L)

Horticulture: Scope, importance and divisions, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.

UNIT - II (16L) Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets, water garden, terrarium, topiary and Bonsai.

UNIT - III (15L) Kitchen garden: Establishment, Organic manures and growth regulators in horticulture, Plant protection measures for horticulture, Seed Propagation methods, Preparation of Nursery beds, Transplantation – steps and Methods.

UNIT - IV (16L) Plant Breeding Nature, Scope and Objectives, Plant introduction, selection methods (pure line and mass), Hybridization techniques, Heterosis breeding, Interspecific and intergeneric hybridization.

UNIT – V (14L) Mutation breeding: Procedure and practices, Mutagens, Polyploidy breeding and its applications.Breeding for disease resistance.

PRACTICALS

Demonstration

i. Vegetative methods of propagation.

a. Cutting-Stem and Leaf cutting

b. Layering-Simple and air layering.

c. Grafting – Tongue grafting.

d. Budding – T-budding.

ii. Garden components -Rockery, hanging baskets, terrarium and topiary.

iii. Garden implements-spade, water can, pruning scissors, digging fork

iv. Designing Kitchen Garden.

v. Plant Breeding: Emasculation and Bagging methods

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin
1-L1	Horticulture: Scope, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.
2-L2	Horticulture: importance
3- L3	Horticulture: divisions
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Vegetative propagation methods- cutting,
8- L1	Vegetative propagation methods layering,
9- L8	Vegetative propagation methods- budding,
10- L9	Vegetative propagation methods- grafting
11-L10	. Vegetative propagation methods- vegetative propagules
12-P11	Unit 11 Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets,
13-P12	Formal Gardening
14-P13	Informal Gardening
15-L14	Design and Establishment of Garden
16-L15	Garden components
17- L16	garden implements
18-L17	lawn making
19- P18	glass house
20- P19	rockery
21-P20	hanging baskets
	Internal Test I begins
22- L21	water garden, terrarium, topiary and Bonsai.
23- IT-1	**Internal Test-I**
24- L22	Kitchen garden: Establishment,
25- L23	Organic manures and growth regulators in horticulture
26- L24	**Test Paper distribution and result analysis**

	Entering Internal Test-I Marks into University portal
27- L25	Plant protection measures for horticulture,
28- L26	Seed Propagation methods
29- P27	Preparation of Nursery beds
30- P2	Transplantation – steps
31-P28	Methods of Transplantation
32-L29	Plant Breeding Nature,.
33-L30	Scope and Objectives,
34- L31	Plant introduction, selection methods (pure line and mass),
35- L32	Hybridization techniques, Heterosis breeding
36- L33	, Interspecific
37- P34	Intergeneric hybridization
38-P35	Mutation breeding:
39- P36	Procedure and practices of
40- L37	Mutagens, Polyploidy breeding
41- L38	and its applications.Breeding for disease resistance.
42-P3	a. Cutting-Stem and Leaf cutting
43- L39	b. Layering-Simple and air layering.
44- P40	c. Grafting – Tongue grafting.
45- P41	d. Budding – T-budding.
46- P42	Garden components -Rockery,
47- L43	Garden components - hanging baskets
	Internal Test II begins
48- L44	terrarium and topiary.
49-IT-II	**Internal Test-II**
50-L45	Garden implements-spade,
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	ii. hanging baskets,
53- P48	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
54- P49	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
55- P50	Plant Breeding: Emasculation and Bagging methods
56- L51	Plant Breeding: Emasculation and Bagging methods
57- L52	
58- L53	
59-P4	**College level meeting/ function**
60- L54	Garden components
61- L55	iii. Garden implements
62- L56	
63- L57	
64- L58	
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical

69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	To know the Scope, importance and divisions of Horticulture
CO2	To know the : Types of gardens – Formal
CO3	Basic knowledge Kitchen garden: Establishment
CO4	To know about Plant Breeding Nature
CO5	To explain the concept of Mutation breeding: Procedure and practices
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Morphology and Taxonomy of Angiosperms
Course Code	JMPB51
Class	III year (2018-2019)
Semester	Odd
Staff Name	Dr. M. Amutha
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the morphology of the plant parts.
- To know the structure of various types of inflorescences, floral parts, and fruits.
- Basic knowledge about taxonomy and classification of angiosperm plants.
- To study about binomial nomenclature.
- To know about angiosperm families.
- To study the preparation of dichotomous key.
- To know about the useful plant parts and their uses.

Syllabus

UNIT 1 Morphology_ Modification of Root, Stem and Leaf. Leaf - Simple, Compound; Phyllotaxy; Inflorescence – Types; Flower- Floral parts; Fruits- Types.

UNIT 11 Principles of taxonomic Hierarchy (Order, Family, Genus and Species Level). Systems of classification (with merits and demerits) – Natural – Benthem aqnd Hooker system, Phylogenetic – Engler and Prantl System; Binomial nomenclature – ICBN, Dichotomous key, Preparation, Maintenance and significance of Herbarium.

UNIT 111 Critical study of the following Families and their Economic importance: Annonaceae, Sterculiaceae, Rutaceae, Caesalpiniaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Sapotaceae.

UNIT IV Convolvulaceae, Asclepiadaceae, Apocynaceae, Lamiaceae, Euphorbiaceae, Amaranthaceae, Liliaceae, Cannaceae and Poaceae.

UNIT V Binomial, Family, Useful part and Uses of the Following Plant Products: Fibres- Jute, Cotton and Hemp; Timber- Teak, Rosewood and Neem; Resin – Camphor and Canada balsam; Cosmeticsb- *Aloe*, Sandal wood Turmeric; Beverages – Tea, Coffee and *Cocoa*; Oil – Coconut oil, Eucalyptus oil and *Pongamia* oil; Fruits and Vegetables- Banana, Jackfruit, Pineapple; Medicinal plants – *Adatoda*, Clove and *Acorus calamus*

PRACTICALS:

1. Morphological identification of plant parts and their modifications.

2. Technical description of plant parts and dissection of floral parts of plants with reference to the families prescribed in the syllabus.

3. Field trips (minimum 2 days) to places under the guidance of teachers to study plants in their natural habitat and submit a report.

4. Preparation of dichotomous key.

5. Identify and comment on the useful plant parts or plants prescribed in the syllabus.

6. Preparation and submission of 10 herbarium sheets.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of morphology
2-L2	Brief account on root modification,
3- L3	Stem and Leaf modification.
4-P4	Practical
5-P5	Practical – Morphology modifications.
6-P6	Practical
7-L7	Brief account about phyllotaxy.
8- L1	Inflorescence.
9- L8	Fruits – Types.
10- L9	Taxanomical Hierarchy.
11-L10	Brief study about Natural classification.
12-P11	Practical

13-P12	Practical – Dissectout Annonaceae, Sterculiaceae.
14-P13	Practical
15-L14	Phylogenetic system of Classification.
16-L15	ICBN
17- L16	Dichotomous key preparation.
18-L17	Preparation steps of Herbarium
19- P18	Practical
20- P19	Practical – Dissectout Rutaceae and Caesalpiniaceae.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Annonaceae
25- L23	Sterculiaceae
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Cucurbitaceae
28- L26	Apiaceae
29- P27	Practical
30- P2	Practical – C Apiaceae, Covolvulaceae
31-P28	Practical
32-L29	Caesalpiniaceae
33-L30	Sapotaceae
34- L31	Rubiaceae
35- L32	Convolvulaceae
36- L33	Asclepiadaceae
37- P34	Practical
38-P35	Practical – Rubiaceae, Sapotaceae , Apocynaceae
39- P36	Practical
40- L37	Lamiaceae
41- L38	Euphorbiaceae
42-P3	Amaranthaceae
43- L39	Cannaceae
44- P40	Practical
45- P41	Practical – Euphorbiaceae, Asclepiadaceae
46- P42	Practical
47- L43	Liliaceae
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Uses of Fibres.
53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Lamiaceae, Cannaceae, Poaceae
56- L51	Practical

57- L52	Timber
58- L53	Resin
59-P4	**College level meeting/ function**
60- L54	Cosmatics
61- L55	Beverages
62- L56	Oil
63- L57	Fruits and vegetables
64- L58	Medicinal plants
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Amaranthaceae, Cannaceae, Liliaceae
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about angiospermic plants.
CO2	Know about angiospermic plants
CO3	Know about the different dicot and monocot plants.
CO4	To learn about different floral parts.
CO5	To know about different economic importance of plants.
CO6	To know about uses of various oils, timbers, bevarages etc.
CO7	To know about uses of medicinal plants.
CO8	To know about classification of plants.
CO9	To know about herbarium preparation.
Experimental Learning	
EL1	Know about dichotomous key preparation.
EL2	Know about how to idendify the dicot and monocot plants.
EL3	Know about taxonomical hierarchy.
EL4	Know about differentiation of floral parts.
Integrated Activity	
IA1	To visit different fields to study the plants in their natural habitat.
IA2	To attended two days study tour about Taaxonomy.

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Plant Physiology
Course Code	GMPB61
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. Mr. D. Abiya Chelliah
Credits	6
L. Hours /P. Hours	6 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the physiology of the plans.

- To know the structure of various types of stomata, chloroplast, and phytohormons .
- Basic knowledge about physiology and classification of macro nutrients and micronutrients.
- To study about C3, C4 and CAM pathways.
- To know about translocation of organic solutes.
- To study the transpiration pull and cohesion theory.
- To know about various phytohormones and their uses.

Syllabus

UNIT I

WaterRelationsof Plants&Transpiration: Water Relations: Imbibition, Diffusion and Osmosis; Water Potential- Definition, Components, Absorption of Water – Mechanism and Factors affecting Water Absorption; TranspirationDefinition, Types, Significance and Mechanism of Stomatal Transpiration- steps and theories, Guttation

UNIT II

Ascent of Sap&Mineral nutrition: Ascent of Sap –Definition, Path of Ascent of Sap, Mechanism- Transpiration Pull and Cohesion Theory.Mineral nutrition - Macro and Micro Nutrients-Absorption of Mineral Salts – Mechanism, Translocation of Organic Solutes - Mechanism of Phloem Transport (Munch‟s Mass flow hypothesis).

UNIT III

Photosynthesis&.Respiration: Photosynthesis:Light and Dark Reactions - Photosynthetic Electron Transport Chain and Photophosphorylation (Cylic and Non cyclic); Carbon Assimilation - C3, C4 and CAM Pathways andits Significance;Respiration: Glycolysis, TCA cycle and Oxidative Phosphorylation.

UNIT IV

Growth and Development: Growth Curve and phases of growth;Phytohormones:Physiological Effect and Practical Applications - Auxin, Gibberellic acid, Cytokinin, Ethylene and Abscisicacid;Photoperiodism and Vernalization.

UNIT V

Seed Dormancy: Causes and Methods ofBreaking Dormancy; Stress Physiology - Classification– Bioticand Abiotic, Stress Factors- Response of Plants to Salt, Drought, Frost and Heat

PRACTICALS

1. Water Potential by Gravimetric Method.

2. Water Potential by Falling Drop Method.

3. Osmotic Potential by Plasmolytic Method.

4. Rate of Photosynthesis in Different Concentrations of Bi-Carbonate – Bubble Method.

5. Measurement of Stomatal Index.

6. Effect of Temperature on Permeability of Plasma Membrane.

7. Separation of Chlorophyll Pigments by Ascending Paper Chromatography.

DEMONSTRATION: 1. Tissue Tension

2. Suction due to Transpiration

3. Ganong‟ sPhotometer

4. Fermentation

5. Arc Auxanometer

6. Clinostat

7. Phototropism

Spotters

1. Absorption Spectrum of Chlorophylls

2. Growth curve. To maintain a record note book.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of Imbibition
2-L2	Brief account on Diffusion,
3- L3	Osmosis , Water Potential and Water Absorption.
4-P4	Practical
5-P5	Practical – Water Potential by Gravimetric method
6-P6	Practical
7-L7	Brief account on Transpiration
8- L1	Mchanism of Stomatal Traspiration
9- L8	Significance of Transpiration.

10- L9	Ascent of sap
11-L10	Brief study about Path of Ascent of sap.
12-P11	Practical
13-P12	Practical – Water Potential by Falling Drop Method.
14-P13	Practical
15-L14	Study about Transpiration Pull Cohesion Thory.
16-L15	Mineral Nutrition
17- L16	Various types of Macronutrients.
18-L17	Different types of micronutruients.
19- P18	Practical
20- P19	Practical – Osmotic Potential by Plasmolytic Method.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Absorption of Mineral Salts.
25- L23	Study about Translocaton of Organic solutes.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Mechanism of Phloem Transport.
28- L26	Study about Light and Dark Reactions.
29- P27	Practical
30- P2	Practical – Quantitative Estimation of Total Chloophyll Content in Leaves.
31-P28	Practical
32-L29	Study about Electron Transport Chain.
33-L30	Photophosphorylation
34- L31	C3 Cycle
35- L32	C4 Cycle
36- L33	CAM Pathway.
37- P34	Practical
38-P35	Practical – Quantitative Estimation of Carotenoid Content in Flowers.
39- P36	Practical
40- L37	Photorespiration.
41- L38	Glycolysis
42-P3	TCA Cycle
43- L39	Study about Oxidative Phosphorylation
44- P40	Practical
45- P41	Practical – Rate of Photosynthesis in Different Concentrations of Bi-Carbonate-Bubble Method.
46- P42	Practical
47- L43	Study about Growth and Growth Curve
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Different Phases of Growth Curve.

53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Measurement of Stomatal Index.
56- L51	Practical
57- L52	Growth Hormones.
58- L53	Auxin and Gibberellic Acid
59-P4	**College level meeting/ function**
60- L54	Cytokinin, Ethylene and Absisic acid
61- L55	Various methods of Seed Dormancy and Breaking of Seed Dormancy.
62- L56	Stress Physiology
63- L57	Biotic and Abiotic Factors of Stress
64- L58	Differentiate Photoperiodism and Vernalization.
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Effect of Temperature on Permeability of Plasma Membrane.
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about Physiology of plants.
CO2	Know about absorption mechanism of plants.
CO3	Know about the different mechanism of Stomatal Transpiration in Plants.
CO4	To learn about differen kind of Photophosphorylations.
CO5	To know about Oxidative Phosphorylation..
CO6	To know about uses of Auxin, Gibbrellic Acid, Cytokinin etc.
CO7	To know about Photoperiodism and Vernalisation.
CO8	To know about Seed Dormancy.
CO9	To know about Stress Physiology.
Experimental Learning	
EL1	Know about Stomatal Index.
EL2	Know about how to Measure the Photosynthetic Rate.
EL3	Know about Stomatal Index.
EL4	Study about Water Potential.

Integrated Activity	
IA1	Study about Osmosis.
IA2	To study Tissue Tension.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc Botany
Course Name	Environmental Studies
Course Code	**SEVS11**
Class	I-year (2017-2018)
Semester	Odd
Staff Name	Mr.S.Darwin Paul Edison, Mr.V.K. Stanley Raja
Credits	2
L. Hours /P. Hours	2 / WK
Total 30Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 20 Hrs (5 units; 5×4=20; 4Hrs /unit)	

Course Objectives

- To understand the natural resources.
- To learn about Eco system
- To understand the Biodiversity and Its Conservation
- To identify the Environmental Pollution
- To learn Social issues and the Environment

Syllabus

ENVIRONMENTAL STUDIES

Unit I

Definition, scope and importance Natural resources and associated problems:

a) Forest resources: Use and over-exploitation, deforestation, timber extraction, dams and their effects on forests and tribal people.

b) Water resources: Use and over-utilization of surface and ground water, floods, drought, dams-benefits and problems, water conservation and watershed management.

c) Mineral resources: Use and exploitation, environmental effects.

d) Food resources: World food problems, changes, effects of modern agriculture, fertilizer-pesticide problems.

e) Energy resources: Growing energy needs, renewable and non renewable energy sources, alternate energy sources.

f) Land resources: Land as a resource, land degradation, man-induced landslides, soil erosion and desertification.

UNIT II: ECOSYSTEMS

a) Forest Ecosystem b) Grassland Ecosystem c) Desert ecosystem d) Aquatic Ecosystem (Ponds, rivers, oceans, estuaries) Energy flow in the ecosystem Ecological succession Food Chains, Food Webs and Ecological Pyramids.

UNIT III: BIODIVERSITY AND ITS CONSERVATION

Introduction Definition: Genetic, species and ecosystem diversity. Bio geographical classification of India Values of Biodiversity Bio diversity at global, national and local levels India as a mega-diversity nation Hot-Spots of biodiversity Threats to biodiversity Endangered and endemic species of India Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT IV: ENVIRONMENTAL POLLUTION

Definition- Causes, effects and control measures of:- a) Air Pollution b) Water Pollution c) Soil Pollution d) Marine Pollution e) Noise Pollution. f) Thermal Pollution Solid Waste Management Disaster Management: Floods, earthquake, cyclone and landslides.

UNIT V: SOCIAL ISSUES AND THE ENVIRONMENT

Climatic change, global warming, acid rain, ozone depletion. Wasteland reclamation Consumerism and Waste products, use and through plastics Environment Protection Act Air (Prevention and Control of Pollution) Act Water (Prevention and Control of Pollution) Act Wildlife Protection Act Forest Conservation Act Population Explosion - Family Welfare Programme Human Rights.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16.06.2017
1-L1	Definition, scope and importance of Natural resources
2-L2	Water resources and food resources
3- P1	**Welcoming of First year and Inauguration of Botany Association**
4-L3	Mineral resources, Food resources, Energy resources and Land resources
5-L4	**Allotting portion for Internal Test-I**
	Internal Test I begins
6-IT-I	**Internal Test-I**
7-L5	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
8-L6	Forest Ecosystem and Grassland Ecosystem
9-L7	Desert ecosystem and Aquatic Ecosystem
10-P2	**College level meeting/Cell function**
11-L8	Biodiversity and its Conservation
12-L9	Definition: Genetic, species and ecosystem diversity.

13-P3	Biogeographical classification of India Values of Biodiversity
14-L10	Environmental Pollution Definition- Causes, effects and control measures
15-L11	Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution and Thermal Pollution
16-L12	**Allotting portion for Internal Test-II**
	Internal Test II begins
17-IT-1	**Internal Test-II**
18-L13	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
19-L14	Global warming
20- P2	**College level meeting/ function**
21-L15	Environment Protection Act Air (Prevention and Control of Pollution) Act Water (Prevention and Control of Pollution) Act
22-L16	Wildlife Protection Act Forest Conservation Act
23- L17	**Allotting portion for Internal Test-III**
	Internal Test III begins
24- IT-III	**Internal Test-III**
25-L18	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
26-MT	**Model Test**
27-MT	**Model Test**
28-MT	**Model Test**
29-L19	**Model test paper distribution and previous year university question paper discussion**
30-L20	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course "<History of India up to 647 A.D >"
CO1	Learned about natural resources of India
CO2	Identify the important resources
CO3	Study about the importance of Eco system in India
CO4	Discuss the Biodiversity and its Conservation
CO5	Learned Biogeographical classification of India and Values of Biodiversity
CO6	Know about the causes for the Environmental Pollution
CO7	Study about how to control the various pollution
CO8	Learned about Global warming
CO9	Study about the important environmental related Acts

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.A. Botany
Course Name	Value Based Education
Course Code	**SVBE21**
Class	I-year (2017-2018)
Semester	Even
Staff Name	Mr. S.Darwin Paul Edison, Mr. V.K Stanley Raja
Credits	2
L. Hours /P. Hours	2 / WK
Total 30Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 20 Hrs (5 units; 5×4=20; 4Hrs /unit)	

Course Objectives

- To enable the students to understand the social realities and to inculcate an essential value system towards building a health society.
- To learn about Social Justice
- To understand the Human Rights and Marginalized People
- To identify the Social Issues and Communal Harmony
- To learn Values and Ethics

Syllabus

VALUE BASED EDUCATION

Unit I:

Social Justice - Definition – need – parameters of social justice – factors responsible for social injustice – caste and gender – contributions of social reformers.

Unit II :

Human Rights and Marginalized People Concept of Human Rights – Principles of human rights – human rights and Indian constitution – Rights of Women and children – violence against women – Rights of marginalized People – like women, children, dalits, minorities, physically challenged etc

Unit III:

Social Issues and Communal Harmony Social issues – causes and magnitude - alcoholism, drug addiction, poverty, unemployment etc – communal harmany –concept –religion and its place in public in public domain – separation of religion from politics –secularism role of civil society

Unit IV:

Media Education and Globalized World Scenario Mass media –functions –characteristics – need and purpose of media literacy – effects and influence - - youth and children – media power – socio cultural and political consequences mass mediated culture - - consumeristic culture – Globalization – new media- prospects and challenges

Unit V:

Values and Ethics Personal values – family values – social values – cultural values – Professional values – and overall ethics – duties and responsibilities

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Social Justice – Definition, parameters of social justice
2-L2	Factors responsible for social injustice – caste and gender – contributions of social reformers
3- P1	**Inauguration of History Association**
4-L3	Human Rights and Marginalized People Concept of Human Rights
5-L4	**Allotting portion for Internal Test-I**
	Internal Test I begins
6-IT-I	**Internal Test-I**
7-L5	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
8-L6	Rights of Women and children – violence against women
9-L7	Social Issues and Communal Harmony Social issues
10-P2	**College level meeting/Cell function**
11-L8	Separation of religion from politics Secularism role of civil society
12-L9	Media Education and Globalized World Scenario
13-P3	Socio cultural and political consequences mass mediated culture
14-L10	Globalization
15-L11	Values and Ethics
16-L12	**Allotting portion for Internal Test-II**
	Internal Test II begins
17-IT-1	**Internal Test-II**
18-L13	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
19-L14	Personal values – family values – social values
20- P2	**College level meeting/ function**

21-L15	Cultural values – Professional values – and overall ethics
22-L16	Duties and responsibilities
23- L17	**Allotting portion for Internal Test-III**
	Internal Test III begins
24- IT-III	**Internal Test-III**
25-L18	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
26-MT	**Model Test**
27-MT	**Model Test**
28-MT	**Model Test**
29-L19	**Model test paper distribution and previous year university question paper discussion**
30-L20	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**CO's** of the course "<Value Based Education >"
CO1	Learned about Social Justice
CO2	Identify the parameters of social justice
CO3	Study about the importance of human rights
CO4	Discuss the Women and children Rights
CO5	Know about the Social Issues and Communal Harmony
CO6	Study about the causes for the alcoholism, drug addiction, poverty, unemployment etc
CO7	Study about the importance of Media Education
CO8	Learned about Globalization
CO9	Study about the important Values and Ethics

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.

Extension activity : Motivate student to take classes for school students.

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Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN (2016-2017)

(Prepared by staff member handling the course)

Programme Name	B.Sc Botany
Course Name	Personality Development
Course Code	**JCSB5A**
Class	III-year (2014-2015)
Semester	Odd
Staff Name	Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK
Total 60Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10Hrs /unit)	

Course Objectives

- To know about the importance of Personality Development.
- To learn how to Developing Self – Awareness
- To understand the Leadership quality
- To utilize the different types of skills
- To learn Significance of managing Emotional intelligence

Syllabus

PERSONALITY DEVELOPMENT

UNIT -I

PERSONALITY - Definition – Determinants – Personality Traits –Theories of Personality – Importance of Personality Development. SELF AWARENESS – Meaning – Benefits of Self – Awareness – Developing Self – Awareness. SWOT – Meaning – Importance- Application – Components. GOAL SETTING Meaning- Importance – Effective goal setting – Principles of goal setting – Goal setting at the Right level.

UNIT – II

SELF MONITORING – Meaning – High self – monitor versus low self monitor – Advantages and Disadvantages self monitor- Self –monitoring and job performance. PERCEPTION- Definition- Factor influencing perception- Perception process –Errors in perception – Avoiding perceptual errors. ATTITUDE – Meaning- Formation of attitude – Types of attitude - Measurement of Attitudes – Barriers to attitude change – Methods to attitude change. ASSERTIVENESS - Meaning –

Assertiveness in Communication – Assertiveness Techniques – Benefits of being Assertive – Improving Assertiveness.

UNIT – III

TEAM BUILDING – Meaning – Types of teams – Importance of Team building- Creating Effective Team. LEADERSHIP – Definition – Leadership style- Theories of leadership – Qualities of an Effect leader. NEGOTIATION SKILLS – Meaning – Principles of Negotiation – Types of Negotiation – The Negotiation Process – Common mistakes in Negotiation process. CONFLICT MANAGEMENT – Definition- Types of Conflict- Levels of Conflict – Conflict Resolution – Conflict management .

UNIT –IV

COMMUNICATION – Definition – Importance of communication – Process of communication - Communication Symbols – Communication network – Barriers in communication – Overcoming Communication Barriers. TRANSACTIONAL ANALYSIS – Meaning – EGO States – Types of Transactions – Johari Window- Life Positions. EMOTIONAL INTELLIGENCE- Meaning – Components of Emotional Intelligence- Significance of managing Emotional intelligence – How to develop Emotional Quotient. STRESS MANAGEMENT – Meaning – Sources of Stress – Symptoms of Stress – Consequences of Stress – Managing Stress

UNIT – V

SOCIAL GRACES – Meaning – Social Grace at Work – Acquiring Social Graces. TABLE MANNERS – Meaning – Table Etiquettes in Multicultural Environment- Do's and Don'ts of Table Etiquettes. DRESS CODE – Meaning- Dress Code for selected Occasions – Dress Code for an Interview. GROUP DISCUSSION – Meaning – Personality traits required for Group Discussion- Process of Group Discussion- Group Discusson Topics. INTERVIEW – Definition- Types of skills – Employer Expectations –Planning for the Interview – Interview Questions- Critical Interview Questions.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on
1-L1	Personality - Definition – Determinants – Traits –Theories of Personality
2-L2	Importance of Personality Development. Self Awareness – Meaning – Benefits of Self – Awareness
3- L3	Developing Self – Awareness.
4-L4	SWOT – Meaning – Importance- Application – Components.
5-L5	Goal Setting Meaning- Importance –
6-L6	Effective goal setting – Principles of goal setting –
7-L7	Goal setting at the Right level.
8- P1	**Inauguration of History Association**
9- L8	Self Monitoring – Meaning – High self – monitor versus low self monitor
10- L9	Advantages and Disadvantages self monitor- Self –monitoring and job performance.
11-L10	Perception- Definition- Factor influencing perception-
12-L11	Perception process –Errors in perception – Avoiding perceptual errors.
13-L12	Attitude – Meaning- Formation of attitude – Types of attitude - Measurement of Attitudes – Barriers to attitude change – Methods to attitude change.
14-L13	Assertiveness - Meaning – Assertiveness in Communication – Assertiveness

	Techniques – Benefits of being Assertive – Improving Assertiveness
15-L14	**Allotting portion for Internal Test-I**
	Internal Test I begins on
16-L15	Team Building – Meaning – Types of teams – Importance of Team building- Creating Effective Team.
17-IT-1	**Internal Test-I**
18-L16	Leadership – Definition – Leadership style- Theories of leadership – Qualities of an Effect leader.
19-L17	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
20-L18	Negotiation Skills – Meaning – Principles of Negotiation – Types of Negotiation – The Negotiation Process – Common mistakes in Negotiation process.
21- L19	Conflict Management – Definition- Types of Conflict- Levels of Conflict – Conflict Resolution – Conflict management
22- P2	**College level meeting/Cell function**
23-L20	Communication – Definition – Importance of communication – Process of communication - Communication Symbols
24-L21	Transactional Analysis – Meaning – EGO States – Types of Transactions – Johari Window- Life Positions.
25-L22	Emotional Intelligence- Meaning – Components of Emotional Intelligence-
26-L23	Significance of managing Emotional intelligence – How to develop Emotional Quotient.
27-L24	Stress Management – Meaning – Sources of Stress –
28-L25	Symptoms of Stress – Consequences of Stress – Managing Stress
29-L26	Social Graces – Meaning – Social Grace at Work –
30-L27	Table Manners – Meaning – Table Etiquettes in Multicultural Environment-
31-L28	Do's and Don'ts of Table Etiquettes.
32-L29	Dress Code – Meaning- Dress Code for selected Occasions
33-L30	Dress Code for an Interview.
34- P3	**Department Seminar**
35-L31	Group Discussion – Meaning – Personality traits required for Group Discussion-
36-L32	**Allotting portion for Internal Test-II**
	Internal Test II begins on
37- L33	Process of Group Discussion-
38- IT-II	**Internal Test-II**
39-L34	Group Discusson Topics.
40-L35	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
41-L36	Interview – Definition-
42- L37	Types of skills –
43- L38	Employer Expectations –
44- P4	**College level meeting/ function**
45-L39	Planning for the Interview –
46-L40	Interview Questions-
47-L41	Critical Interview Questions.
48-L42	Acquiring Social Graces.
49-L43	Communication network –
50-L44	**Allotting portion for Internal Test-III**

	Internal Test III begins on
51 L45	Barriers in communication –
52- L46	Overcoming Communication Barriers.
53-IT-III	**Internal Test-III**
54-L47	Revision
55-L48	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
56- MT	**Model Test begins on**
57-MT	**Model Test**
58-MT	**Model Test**
59- L49	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on

Course Outcomes

Learning Outcomes	**COs** of the course "<Personality Development >"
CO1	After learning this course, students will able to explain the importance of Personality Development
CO2	Study about the Developing Self – Awareness
CO3	Understand the Leadership quality
CO4	Utilized the different types of skills
CO5	Learned about the Significance of managing Emotional intelligence
CO6	Discuss the SWOT Analyses
CO7	Learned improve the Personality Quality
CO8	Study about the Interview dress code
CO9	Understand the Self confidence

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Plant Anatomy and Micro Techniques
Course Code	SMBO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Meristems and theories of meristem tissue
- To discuss the type and function of simple and permanent tissue
- To explain the internal structure of moncot and dicot root stem and leaves
- To describe the normal and secondary thickening in dicot stem and root
- To illustrate the Nodal anatomy
- To describe the principles of Microscope.
- To describe the working nature of Light and Electron Microscope (TEM only)
- Explain types of staining techniques and Maceration techniques

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core – I
PLANT ANATOMY AND MICRO TECHNIQUES
(4 hrs/week)

UNIT –I **12Hrs**

Meristems – Characteristics of meristematic tissues – Types, functions and Theories of meristems. Structure and functions of simple and permanent tissues – parenchyma, collenchyma, sclerenchyma, xylem and phloem.

UNIT – II **12Hrs**

Structure of dicot stem and root, structure of monocot stem and root, structure of dicot and monocot leaves.

UNIT – III **12Hrs**

Normal secondary thickening in dicot stem and root, anomalous secondary growth in the stem of *Boerhaavia*and *Dracaena*.

UNIT – IV **12Hrs**

Nodal anatomy: Types of nodes – unilocular, trilocular and multilocular; leaf traces and leaf gaps; epidermal tissue system: stomatal types, hair, trichomes and glands.

UNIT – V **12Hrs**

Microscopy: Principle and working of simple and compound light microscopes and electron microscope (TEM only). Micro techniques – simple staining, double staining and preparation of permanent slides – Maceration

PRACTICALS:

1. To observe and identify the following slides showing
    a. Meristems – shoot apex and root apex
    b. Simple tissues
    c. Xylem elements
2. Primary structure of stem, root and leaves of dicot and monocot plant.
3. Normal secondary thickening in dicot stem and root.
4. Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
5. Maceration technique (Xylem elements only)
6. Demonstration: Preparation of double stained permanent slides.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Meristems – Characteristics of meristematic tissues
2-L2	Theories of meristems
3- L3	Types and functions of meristems
4-L4	Structure and functions of simple Tissue
5-L5	Structure and functions of parenchyma, collenchymas and sclerenchyma
6-L6	Structure and functions of Permanent tissue
7-L7	Structure and functions of xylem
8-L8	Structure and functions of phloem.
9-L9	UNIT II, Structure of dicot stem
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Structure of dicot root
12-L11	Structure of monocot stem
13-L12	Structure of monocot root
14-L13	Structure of dicot leaves.
15-L14	Structure of monocot leaves.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Explain the Secondary Thickening
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Secondary Thickening in dicot stem
21-P2	**College level meeting / Cell function**
22-L19	Explain the Secondary Thickening in dicot root
23-L20	Explain the process of secondary thickening
24-L21	Describe the concept of Cambium formation
25-L22	Analysis the role of secondary tissue formation
26-L23	Determine the functions of secondary tissue

27-L24	Explain the concept of anomalous Secondary growth
28-L25	Explain the anomalous Secondary growth in *Boerhaavia*
29-L26	Explain the anomalous Secondary growth in *Dracaena*
30-L27	UNIT IV, Explain what is Nodal anatomy
31-L28	To give an account on node and Types of node
32-L29	Unilocular node, Trilocular node, multilocular node, Leaf traces and Leaf gaps
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Epidermal Tissue system - Stomatal types, Epidermal Hair and Trichomes
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Working Principles of simple Microscope
39-L34	Working Principles of compound light Microscope
40-L35	Working Principles of Electron Microscope (TEM only)
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Micro Technique – Simple staining
44-L38	Micro Technique – Double staining
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Permanent slide
47-L41	Maceration
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Microscopy Techniques
50-L44	Recall the Micro Techniques (Simple staining, Double staining, Preparation of Permanent slide and Maceration
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To know the concept of Meristems and theories of meristem tissue
CO2	To know the type and function of simple and permanent tissue
CO3	To know the internal structure of moncot and dicot root stem and leaves
CO4	To know the normal and secondary thickening in dicot stem and

	root
CO5	To know the Nodal anatomy
CO6	To know the principles of Microscope.
CO7	To know the working nature of Light and Electron Microscope (TEM only)
CO8	To know types of staining techniques
CO9	To know the Maceration techniques
Experimental Learning	
EL1	To know the internal structure of meristems and simple tissue
EL2	Primary structure of stem, root and leaves of dicot and monocot plant.
EL3	Normal secondary thickening in dicot stem and root.
EL4	Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
EL5	Maceration technique (Xylem elements only) and Demonstration: Preparation of double stained permanent slides.
Integrated Activity	
IA1	Prepare model of Xylem elements
IA2	Preparation of double stained permanent slides for Dicot stem and root

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Algae and Bryophytes
Course Code	SMBO12
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Plant Diversity and Medicinal Botany
Course Code	SABO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Fungi, Plant Pathology and Lichenology
Course Code	SMBO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To recognize the General characteristic feature of Fungi
- To explain the classification of fungi
- To understand the economic importance of Fungi
- To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
- To understand the plant diseases
- To recognize the General characteristic feature of Lichen
- To explain the classification of Lichen
- To understand the economic importance of Lichen
- To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 3

FUNGI, PLANT PATHOLOGY AND LICHENOLOGY (4 hrs/week)

UNIT I **12Hrs**

General characters and classification of fungi based on Alexopoulous (1962). occurrence, systematic position, structure, reproduction and life cycle of Albugo and Mucor.

UNIT II **12Hrs**

Occurrence, systematic position, structure, reproduction and life cycle of Peziza and Puccinia. Economic importance of fungi: Role of fungi in medicine, industry, agriculture, food and food products.

UNIT III **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Tikka disease of groundnut, Red rot of sugarcane; Paddy blast.

UNIT IV **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Citrus canker, Bunchy top disease of Banana and Tobacco Mosaic viral disease.

UNIT V **12Hrs**

Lichens: General account, types and economic importance of Lichens. Structure and reproduction with special reference to *Usnea.*

PRACTICALS

1. Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.

2. Spotters:

i. Slides - *Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus and Teleutosorus

ii. Disease infected leaves showing Albugo and Puccinia; Usnea habit

iii. Observe and identify the following Plant diseases.

a. Tikka disease of Groundnut

b. Red Rot of Sugarcane

c. Paddy Blast

d. Citrus Canker

e. Bunchy Top of Banana

f. Tobacco Mosaic Viral disease

5. Maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I,** General characters of fungi
2-L2	Classification of fungi based on Alexopoulous (1962).
3- L3	occurrence, systematic position Albugo
4-L4	Structure Albugo
5-L5	Reproduction Albugo
6-L6	life cycle of Albugo
7-L7	occurrence,
8-L8	systematic position of Mucor.
9-L9	Structure of Mucor.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Reproduction of Mucor.
12-L11	life cycle of Mucor.
13-L12	**UNIT II** Occurrence, systematic position, structure, reproduction and life cycle of Peziza
14-L13	Occurrence, systematic position, structure, reproduction and life cycle of Puccinia.
15-L14	Economic importance of fungi
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	**UNIT III,** Introduction to plant diseases
	Entering Internal Test-I Marks into University portal
20-L18	Tikka disease of groundnut with special reference to the symptoms, etiology, dissemination and control measures.
21-P2	**College level meeting / Cell function**
22-L19	Red rot of sugarcane with special reference to the symptoms
23-L20	Red rot of sugarcane with special reference to etiology and dissemination
24-L21	Red rot of sugarcane with special reference to control measures:
25-L22	Paddy blast with special reference to the symptoms and etiology
26-L23	Dissemination and control measures of Paddy blast
27-L24	**UNIT IV** Citrus canker disease with special reference to the symptoms
28-L25	Citrus canker with special reference to etiology and dissemination
29-L26	Bunchy top disease of Banana with special reference to the symptoms
30-L27	Bunchy top disease of Banana with special reference to etiology and dissemination
31-L28	Tobacco Mosaic viral disease with special reference to the symptoms
32-L29	Tobacco Mosaic viral disease with special reference to etiology and dissemination
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	**UNIT V** Lichens: General account,
36-L32	**Allotting portion for Assignment/seminar**

37-IT-II	**Internal Test-II**
38-L33	Types of Lichen.
39-L34	Economic importance of Lichens
40-L35	Occurrence of *Usnea.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Systematic position of *Usnea.*
44-L38	Structure of *Usnea.*
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Reproduction of *Usnea.*
47-L41	Economic importance of *Usnea.*
48-L42	**Allotting portion for Internal Test-III**
49-L43	Economic importance of Lichen
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "**Fungi, Plant Pathology and Lichenology**"
CO1	To recognize the General characteristic feature of Fungi
CO2	To explain the classification of fungi
CO3	To understand the economic importance of Fungi
CO4	To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
CO5	To understand the plant diseases
CO6	To recognize the General characteristic feature of Lichen
CO7	To explain the classification of Lichen
CO8	To understand the economic importance of Lichen
CO9	To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen
Experimental Learning	
EL1	To know the Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.
EL2	*Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus

	and Teleutosorus.
EL3	Prepare the permanent slide
EL4	Preserve the plant Disease
Integrated Activity	
IA1	Prepare the permanent slide
IA2	Preserve the plant Disease

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Cell Biology & Embryology of Angiosperms
Course Code	SMBO 22
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of prokaryotic and eukaryotic cell
- To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
- Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
- Structure of Microsporoangium, Megasporogenesis
- To understand the Double fertilization process

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 4

CELL BIOLOGY & EMBRYOLOGY OF ANGIOSPERMS (4 hrs/week)

UNIT I Cell Biology: Structure of a Plant cell – prokaryotic and eukaryotic cell, structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.

UNIT II Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.

UNIT III Non-living inclusions - cystolith, raphides, starch grains. Cell Division: Mitosis and Meiosis.

UNIT IV Embryology : Structure of Microsporoangium, microsporogenesis, development of male gametophyte. Types and structure of megasporangium, Megasporogenesis, development of female gametophyte, Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type

UNIT V Double fertilization, types of endosperm – nuclear, cellular and helobial; Ruminate endosperm.Structure and Development of dicot embryo (Capsella) and Polyembryony.

PRACTICALS

Cell Biology

1. Mitosis using Onion roots.
2. Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
3. Non-living inclusions – Starch grains, Cystolith and Raphides.

Embryology of Angiosperms

1. Dissect out any one stage of embryo.
2. Identification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony
3. Specimen – Ruminate endosperm

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I** Introduction about Cell Biology
2-L2	Structure of a Plant cell
3- L3	Structure of prokaryotic and eukaryotic cell
4-L4	structure of cell wall
5-L5	Functions of cell wall
6-L6	Structure of plasma membrane
7-L7	Functions of plasma membrane
8-L8	Structure and Functions of endoplasmic reticulum
9-L9	Structure and Functions of ribosome.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II Structure of Mitochondria
12-L11	Functions of Mitochondria
13-L12	Structure and functions of Chloroplast
14-L13	Structure and functions of Nucleus
15-L14	Structure and functions of Chromosome.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Non-living inclusions Introduction
	Entering Internal Test-I Marks into University portal

20-L18	Cystolith
21-P2	**College level meeting / Cell function**
22-L19	Raphides
23-L20	Starch grains
24-L21	Cell Division Introduction
25-L22	Mitosis
26-L23	Meiosis. I
27-L24	Meiosis. II
28-L25	UNIT IV, Embryology Introduction
29-L26	Structure of Microsporoangium
30-L27	Microsporogenesis
31-L28	Development of male gametophyte
32-L29	Types and structure of megasporangium
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Development of female gametophyte
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type
39-L34	UNIT V, Double fertilization
40-L35	Types of endosperm
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Nuclear and Cellular endosperm
44-L38	Helobial endosperm
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Ruminate endosperm
47-L41	Development of dicot embryo
48-L42	**Allotting portion for Internal Test-III**
49-L43	Polyembryony.
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Cell Biology & Embryology of Angiosperms"
	To understand the concept of prokaryotic and eukaryotic cell
CO1	To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
CO2	Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
CO3	Structure of Microsporoangium, Megasporogenesis
CO4	To understand the Double fertilization process
Experimental Learning	
EL1	Mitosis using Onion roots.
EL2	Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
EL3	Non-living inclusions – Starch grains, Cystolith and Raphides.
EL4	dentification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony Ruminate endosperm
Integrated Activity	
IA1	Prepare of Nucleus
IA2	Fixing of Mitosis using Onion roots.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Embryology, Plant Anatomy, Physiology and Biotechnology
Course Code	SABO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Structure and development of microsporangium and megasporangium.
- To explain the concept of Double fertilization,
- To explain the Meristem - Structure and classification
- To know the function of simple and complex tissue
- To Explain the Photosynthesis
- To understand the process of Transpiration Absorption of water Ascent of sap
- To know the Tissue Culture – Scope and importance
- Mass culture of Nostoc and Yeast

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester-II / Allied –II

Semester II/IV

EMBRYOLOGY, PLANT ANATOMY, PHYSIOLOGY AND BIOTECHNOLOGY
4hrs/week

UNIT – I Structure and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.

UNIT – II Meristem - Structure and classification. Simple tissues, complex tissues; Primary structure of Dicot and Monocot stem and root; Structure of leaf; Normal secondary thickening in dicot stem.

UNIT – III Absorption of water – diffusion, osmosis, imbibition, mechanism of absorption of water; Ascent of sap – (cohesion theory only); Transpiration – Types, Mechanism of stomatal transpiration (Starch – sugar hypothesis); Photosynthesis importance of photosynthesis, Mechanism of Photosynthesis – Light and dark reaction (Calvin cycle).

UNIT – IV Nostoc - Morphology, Use as Biofertilizerand Mass cultivation; Structure,multiplication (budding and fission) and Mass culture of Yeast.

UNIT – V Tissue Culture – Scope and importance - totipotency, Nutrient media(M.S medium) Callus and Meristem Culture; Applications of plant tissue culture.

PRACTICAL – 2

1) Dissect out young embryo from Tridax flower bud.

2) Make suitable micro-preparations of dicot and monocot stem, root

3) Demonstrate the physiology experimental set up –Potato osmoscope, Ganong's light screen, Bell jar experiment

4)) Identify the Photograph/ Slide/ Specimen/setup

(i) Nostoc

(ii) Yeast

(iii) Callus culture,

(iv) Meristem culture.

6) Maintain a record note book for external and internal evaluation

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Structure of microsporangium and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.
2-L2	Development of microsporangium
3- L3	Structure and types of megasporangium
4-L4	development of megasporangium
5-L5	Development of male gametophyte

6-L6	Development of female gametophyte
7-L7	Double fertilization
8-L8	Endosperm – types.
9-L9	Structure of dicot embryo.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II II Meristem - Structure and classification
12-L11	Simple tissues, complex tissues
13-L12	Monocot stem and root
14-L13	Dicot stem and root
15-L14	Normal secondary thickening in dicot stem.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Absorption of water – diffusion
	Entering Internal Test-I Marks into University portal
20-L18	Osmosis and imbibition
21-P2	**College level meeting / Cell function**
22-L19	mechanism of absorption of water; Ascent of sap – (cohesion theory only)
23-L20	Transpiration – Types
24-L21	Mechanism of stomatal transpiration (Starch – sugar hypothesis);
25-L22	Importance of photosynthesis
26-L23	Mechanism of Photosynthesis
27-L24	Light and dark reaction (Calvin cycle).
28-L25	Light and dark reaction (Calvin cycle).
29-L26	Light and dark reaction (Calvin cycle).
30-L27	**UNIT IV** Nostoc - Morphology,
31-L28	Use as Biofertilizer
32-L29	Structure and multiplication (budding and fission) of Yeast
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Mass culture of Yeast.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Tissue Culture Introduction
39-L34	Tissue Culture – Scope
40-L35	Tissue Culture –importance
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Totipotency
44-L38	Nutrient media(M.S medium)
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Callus Culture
47-L41	Meristem Culture
48-L42	**Allotting portion for Internal Test-III**
49-L43	Applications of plant tissue culture.
50-L44	Applications of plant tissue culture.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Embryology, Plant Anatomy, Physiology and Biotechnology"
CO1	To understand the Structure and development of microsporangium and megasporangium.
CO2	To explain the concept of Double fertilization,
CO3	To explain the Meristem - Structure and classification
CO4	To know the function of simple and complex tissue
CO5	To Explain the Photosynthesis
CO6	To understand the process of Transpiration Absorption of water Ascent of sap
CO7	To know the Tissue Culture – Scope and importance
CO8	Mass culture of Nostoc and Yeast
Experimental Learning	
EL1	Make suitable micro-preparations of dicot and monocot stem
EL2	Demonstrate the physiology experimental set up –Potato osmoscope
EL3	Ganong's light screen, Bell jar experiment
EL4	(i) Nostoc (ii) Yeast (iii) Callus culture, (iv) Meristem culture.
Integrated Activity	
IA1	Preserve the permanent slide for Mocot , dicot stem and root
IA2	Preparation of mass culture of Yeast and Nostoc

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Organic Farming
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mr. V.K Stanley Raja 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the soil Profile
- To discuss the Organic Matter
- To explain the Soil Air and water
- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
- To explain the Green Manure: Plant wastes
- To explain the Biofertilizers
- Explain the Vermicomposting:

MSU/2017-18/ B. Sc Botany / Semester –III
Skill Based Subject -I (B) ORGANIC FARMING (4hrs/week)

Unit –I **(11hr)**
Soil Science: Brief Account of Soil Profile, Fertility of Soil – Importance of Organic Matter – Water Retentivity and Aeration of Soil.

Unit – II: **(12hr)**
Manure and Manuring: Organic Manure, Types, Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.

Unit – III **(10 hr)**
Green Manure: Plant wastes – Fallen leaves and Twigs, Humus Formation, Green Manuring, Mulching - Leaves of Trees like Pongamia, Gliricidia ,Azadirachta,andCalotropis, Compost making.

Unit-IV **(13hr)**

Biofertilizers: Rhizobium-Importance, Mass Production and Application, VAM Fungi – Importance, Mass production and Applications.

Unit–V **(14hr)**

Vermicomposting: Importance, Application and Production of Vermicompost, Preparation and importance of Panchagavyaas foliar spray

PRACTICALS:

17. To make suitable micro preparations of the following: Lycopodium Stem,
    Adiantum Stipe,
    Marsilea Petiole,
    Rhizome and Sporo carp.
    Pinus Stem and Needle,
    Gnetum Stem and Leaf.
18. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

    Paleobotany (Slide):
    Rhynia stem
    Lepidodendron stem
    Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Soil Science: Introduction
2-L2	Brief Account of Soil Profile
3- L3	Fertility of Soil
4-L4	Importance of Organic Matter
5-L5	Water Retentivity
6-L6	Aeration of Soil.
7-L7	UNIT II Manure and Manuring: Introduction, , Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
8-L8	Organic Manure
9-L9	Organic Manure Types
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Animal Wastes – Cattle Dung and Urine
12-L11	Poultry Wastes
13-L12	Slaughter Wastes
14-L13	Piggery Wastes
15-L14	Fishery Wastes
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**

18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III Green Manure: Plant wastes
	Entering Internal Test-I Marks into University portal
20-L18	Plant wastes – Fallen leaves and Twigs
21-P2	**College level meeting / Cell function**
22-L19	Humus Formation
23-L20	Green Manuring
24-L21	Mulching - Leaves of Trees like Pongamia
25-L22	Mulching - Leaves of Trees like Gliricidia
26-L23	Azadirachta
27-L24	Calotropis
28-L25	Compost making
29-L26	Biofertilizers: Rhizobium-Importance
30-L27	Mass production of VAM
31-L28	Mass production of VAM
32-L29	Applications of VAM
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Vermicomposting:
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Importance of Vermicomposting
39-L34	Vermiculture
40-L35	Production of Vermicompost Indoor
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Production of Vermicompost Out door
44-L38	Preparation of Panchagavyaas
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Panchagavyaas
47-L41	Application of Panchagavyaas
48-L42	**Allotting portion for Internal Test-III**
49-L43	Dosage of Panchagavyaas
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the soil Profile
CO2	➢ To discuss the Organic Matter
CO3	➢ To explain the Soil Air and water
CO4	➢ To Discuss the Stelar Evolution in Pteridophytes.
CO5	➢ To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
CO6	➢ To explain the Green Manure: Plant wastes
CO7	➢ To explain the Biofertilizers
CO8	➢ Explain the Vermicomposting:

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	SMBO 31
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the general character of Pteridophytes
- To discuss the classification of Pteridophytes
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea

- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character of Gymnosperms
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
- Economic importance of Gymnosperms
- Explain the Geological Time Scale

MSU/2017-2018/B.Sc. Botany/Semester-III/Core Paper – 5

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY (4hrs/week)

UNIIT I **(12L)**

Pteridophytes: General Characteristics and Classification of Pteridophytes (Sporne 1966), Psilotum and Lycopodium: Distribution, Systematic Position, Structure, Reproduction and Life History (need not study the development of gametophyte, sex organs and sporophyte).

UNIT II **(11L)**

Adiantum, Marsilea: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle (need not study the development of gametophytes, sex organ and sporophyte), Stelar Evolution in Pteridophytes.

UNIT III **(13L)**

Gymnosperms: General Characteristics and Classification of Gymnosperms (David Bierhorst, 1971), Pinus: Distribution, Systematic Position, Structure, Reproduction and Life History

UNIT IV **(14L)**

Gnetum: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of (need not study the Development of Sex Organs and Sporophyte). Economic Importance of Gymnosperms.

UNIT V **(10L)**

Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.

PRACTICALS:

19. To make suitable micro preparations of the following: Lycopodium Stem,
    Adiantum Stipe,
    Marsilea Petiole,
    Rhizome and Sporo carp.
    Pinus Stem and Needle,
    Gnetum Stem and Leaf.
20. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

    Paleobotany (Slide):
    Rhynia stem
    Lepidodendron stem
    Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Pteridophytes: General Characteristics
2-L2	Classification of Pteridophytes (Sporne 1966)
3- L3	Distribution, Systematic Position of Lycopodium
4-L4	Structure of Lycopodium
5-L5	Reproduction and Life History of Lycopodium
6-L6	Unit II Occurrence of Adiantum
7-L7	Distribution, Systematic Position of Adiantum
8-L8	Structure of Adiantum

9-L9	Reproduction and Life History of Adiantum
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Occurrence of Marsilea
12-L11	Distribution, Systematic Position of Marsilea
13-L12	Structure of Marsilea
14-L13	Reproduction and Life History of Marsilea
15-L14	Unit III Gymnosperms: General Characteristics
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Classification of Gymnosperms
	Entering Internal Test-I Marks into University portal
20-L18	Distribution, Systematic Position of Pinus
21-P2	**College level meeting / Cell function**
22-L19	Structure of Pinus
23-L20	Reproduction of Pinus
24-L21	Reproduction of Pinus
25-L22	Life History of Pinus
26-L23	UNIT IV Gnetum: Occurrence
27-L24	Systematic Position of Gnetum
28-L25	Structure of Gnetum
29-L26	Reproduction of Gnetum
30-L27	Life Cycle of of Gnetum
31-L28	Economic Importance of Gymnosperms
32-L29	Revision of IV Unit
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Geological Time Scale
39-L34	Methods of Fossilization
40-L35	Methods of Fossilization
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Brief Study of Rhynia
44-L38	Brief Study of Rhynia
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Brief Study of Lepidodendron
47-L41	Brief Study of Lepidodendron
48-L42	**Allotting portion for Internal Test-III**
49-L43	Brief Study of Lyginopteris.
50-L44	Brief Study of Lyginopteris.
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**

54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To understand the general character of Pteridophytes
CO2	To discuss the classification of Pteridophytes
CO3	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea
CO4	To Discuss the Stelar Evolution in Pteridophytes.
CO5	To understand the general character of Gymnosperms
CO6	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
CO7	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
CO8	Economic importance of Gymnosperms
CO9	Explain the Geological Time Scale
Experimental Learning	
EL1	micro preparations of the following: Lycopodium Stem, Adiantum Stipe, Marsilea Petiole, Rhizome and Sporo carp. Pinus Stem and Needle,
EL2	To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.
EL3	Paleobotany (Slide): Rhynia stem Lepidodendron stem Lyginopteris stem.
Integrated Activity	
IA1	Prepare Permanent Slide for Pinus
IA2	Prepare Permanent Slide Marsilea

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature

Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Microbiology and Techniques In Biology
Course Code	SMBO41
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. V.K. Stanley Raja 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Microbiology
- To discuss the Five Kingdom Classification
- To explain the Gram Staining
- To describe the Virus and Bacteriophage
- To illustrate the Bacterio flora in Milk
- To describe the principles of Microscope.
- To describe the working nature of UV Spectrometer, MRI, ECG

MSU/2017-18/ B. Sc Botany/ Semester –IV /Core paper-6

MICROBIOLOGY AND TECHNIQUES IN BIOLOGY (4hrs/week)

UNIIT I (13L)

Microbiology: Brief History and Development, Classification of Microorganisms (Whittaker‟s Five Kingdom Concept), Bacteria - Outline of Classification (Bergey‟smanual), Ultra Structure, Nutritional Types and Reproduction of Bacteria, Media Preparation and Pure Culture techniques of Bacteria, Staining Technique - Gram Staining.

UNIT II (12L)

Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.

UNIT III (12L)

Microbes: Microbes in Food Production, Spoilage, Poisoning and Preservation. Bacteria Flora in Milk, Pasteurization of Milk and Milk Products, Bacterial Pathogens and Water Pollution, Drinking Water as a Vehicle of Diseases, Purification of water.

UNIT IV (11L)

Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.

UNIT V (12L)

Electrophoresis: Basic principles, electrophoretic mobility, factors, isoelectric focusing. Types- vertical and horizontal agarose and poly acrylamide gel electrophoresis, detection and recovery of electrophorogram. Gel documentation system. X-ray crystallography.

PRACTICALS

1. Preparation of Culture Media for Bacteria.

2. Preparation of Serial Dilution.

3. Isolation of Bacteria – Streak Plate Method

4. Identify the type of Bacteria using Gram Staining.

5. Analysis of Milk – Methylene Blue Dye Reduction Test.

6. Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Microbiology: Brief History
2-L2	Development of Microbiology
3- L3	Classification of Microorganisms (Whittaker‟s Five Kingdom Concept)
4-L4	Bacteria - Outline of Classification
5-L5	Bacteria - Outline of Classification
6-L6	Ultra Structure of Bacteria
7-L7	Nutritional Types of Bacteria
8-L8	Reproduction of Bacteria
9-L9	Media Preparation and Pure Culture techniques of Bacteria,
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Staining Technique - Gram Staining.

12-L11	UNIT II Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.
13-L12	Structure of HIV
14-L13	Reproduction of HIV
15-L14	T4 Bacteriophages, Viroids, Virions and Mycoplasma
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Transmission of Viruses and Purification of Viruses.
	Entering Internal Test-I Marks into University portal
20-L18	UNIT III
21-P2	**College level meeting / Cell function**
22-L19	Microbes: Microbes in Food Production
23-L20	Spoilage,
24-L21	Poisoning
25-L22	Preservation
26-L23	Bacteria Flora in Milk
27-L24	Pasteurization of Milk and Milk Products
28-L25	Bacterial Pathogens
29-L26	Water Pollution, Drinking Water as a Vehicle of Diseases
30-L27	Purification of water.
31-L28	UNIT IV, Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.
32-L29	Instruments: Principles, Working Mechanism and Applications of UV Spectrometer
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Instruments: Principles, Working Mechanism and Applications of Centrifuge
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Instruments: Principles, Working Mechanism and Applications of ECG
39-L34	Instruments: Principles, Working Mechanism and Applications of MRI
40-L35	Instruments: Principles, Working Mechanism and Applications of Positron emission tomography.
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Electrophoresis: Basic principles,
44-L38	electrophoretic isoelectric focusing
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Types- vertical and horizontal agarose
47-L41	Acrylamide gel electrophoresis
48-L42	**Allotting portion for Internal Test-III**
49-L43	Detection and recovery of electrophorogram.
50-L44	X-ray crystallography.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the concept of Microbiology
CO2	➢ To discuss the Five Kingdom Classification
CO3	➢ To explain the Gram Staining
CO4	➢ To describe the Virus and Bacteriophage
CO5	➢ To illustrate the Bacterio flora in Milk
CO6	➢ To describe the principles of Microscope.
CO7	➢ To describe the working nature of UV Spectrometer, MRI, ECG
Experimental Learning	
EL1	Preparation of Culture Media for Bacteria.
EL2	2. Preparation of Serial Dilution.
EL3	3. Isolation of Bacteria – Streak Plate Method
EL4	4. Identify the type of Bacteria using Gram Staining.
EL5	5. Analysis of Milk – Methylene Blue Dye Reduction Test.
	Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.
Integrated Activity	
IA1	Prepare the gram Staining for the given Bacterial Culture
IA2	Isolation of Bacteria – Streak Plate Method

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Preservation of fruits and vegetables
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. S.Darwin 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
- To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
- To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
- To describe the Sauce, Pickles & Ketchup
- To illustrate the Canning of Fruits& Vegetables

MSU/2017-18/ B. Sc Botany / Semester –III Skill Based Subject -I (A)
PRESERVATION OF FRUITS AND VEGETABLES (4hrs/week)

Unit-I (11L)

Fruits and Vegetables: Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.

Unit-II (13L)

Principles of Preservation: Importance and Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.

Unit-III (13L)

Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.

Unit- IV (11 L)

Preparation of Chutney, Sauce, Pickles & Ketchup: Preparation of Chutney- Mango, Sauce – Tomato,Pickles- Lime, Mango and Garlic, KetchupTomato. Drying of fruits: Banana, Mango, Grapes and Fig.

Unit- V (12 L)

Canning of Fruits& Vegetables: Mango and Banana; Tomato, Carrot, Bean and Mushrooms.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	Fruits and Vegetables: Nutritive values
2-L2	factors affecting storage of Fruits
3- L3	factors affecting storage of Vegetables
4-L4	Spoilage of fruits - microbial, enzymatic and insects.
5-L5	Spoilage of vegetables - microbial, enzymatic and insects.
6-L6	Unit II Principles of Preservation
7-L7	Importance of Preservation
8-L8	Methods of Preservation
9-L9	Refrigeration
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Freezing
12-L11	Canning,
13-L12	Drying
14-L13	Dehydration
15-L14	Chemical preservatives.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis**-
19-L17	UNIT III Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
	Entering Internal Test-I Marks into University portal
20-L18	Methods of preparation of Fruit Juice- Orange,
21-P2	**College level meeting / Cell function**
22-L19	Squashes- grape
23-L20	Squashes- Pine apple
24-L21	Jam - Tomato
25-L22	Jam - Mixed Fruit
26-L23	Jellies- Guava
27-L24	UNIT Preparation of Chutney.
28-L25	Drying of fruits

29-L26	Sauce
30-L27	Pickles
31-L28	Ketchup
32-L29	Preparation of Chutney- Mango
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Pickles- Lime
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Pickles Mango
39-L34	Pickles Garlic
40-L35	Drying of fruits
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Drying of fruits: Banana
44-L38	Drying of fruits: Mango
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Drying of fruits: Grapes
47-L41	Drying of fig
48-L42	**Allotting portion for Internal Test-III**
49-L43	Clarifying the doubts in the Syllabus
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
CO2	➢ To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
CO3	➢ To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit ,

	Jellies- Guava.
CO4	➢ To describe the Sauce, Pickles & Ketchup
CO5	➢ To illustrate the Canning of Fruits& Vegetables

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

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Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

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Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Biotechnology and Genetic Engineering
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. D. Abiya Chelliah
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the principle of Tissue Culture Laboratory
- To know the Meristem Culture and Artificial Seed.
- Basic knowledge about Techniques of genetic engineering
- To know about Identification of Recombinants
- To explain the concept of DNA transfer techniques.

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 1A

BIOTECHNOLOGY AND GENETIC ENGINEERING (5hrs/week)

UNIT1 (15L)

Tissue Culture: Introduction, definition, history, scope and importance of plant tissue culture, Totipotency of cells, Tissue culture laboratory- organization and requirements, Sterilization techniques, Nutrient media- composition and preparation.

UNIT 11 (14L)

Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Protoplast isolation, fusion, selection of hybrids and regeneration.Cybrids– production and applications, Artificial seed: production, advantages and disadvantages.

UNIT 111 (16L)

Techniques of genetic engineering: Isolation of specific genes, enzymes used in gene cloning, Cloning Vectors - Plasmids,Cosmids and Phagemids,cDNALibraries,Agrobacterium mediated gene transfer in plants,GM plants – BtBrinjal, Bt Cotton, Golden rice. Bioethical issues.

UNIT 1V (16L)

Identification of Recombinants: Insertional inactivation, Immunochemical Method and Colony Hybridization Technique.Selection of Recombinant using Selective Medium and reporter genes, Blotting Techniques – Southern, Northern and Western Blotting.

UNIT V (14L)

Mutagenesis& DNA transfer techniques: Site directed mutagenesis and random mutagenesis; DNA transfer techniques: Physical method Microinjection, Chemical method-Calcium phosphate method, Electrical method Electroporation, Natural-Conjugation and bacterial transformation.

Spotters/Photographs

i. Callus culture from Carrot Explant.

ii. Protoplast Isolation. ‘iii. Plasmids – Ti plasmids iv. Gene cloning in E. Coli. v. Agrobacterium mediated gene transfer. vi. Blotting Techniques.

vii. Colony Hybridization technique. viii. Transgenic Plants prescribed in the syllabus. To maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Tissue Culture: Introduction,
2-L2	Definition of Tissue Culture
3- L3	history, scope and importance of plant tissue culture
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Totipotency of cells
8- L1	Tissue culture laboratory- organization
9- L8	Tissue culture laboratory requirements
10- L9	Sterilization techniques
11-L10	.Protoplast Isolation
12-P11	Protoplast Isolation
13-P12	Protoplast Isolation
14-P13	Practical
15-L14	Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Artificial seed: production, advantages and disadvantages.
16-L15	Protoplast isolation, fusion, selection of hybrids and regeneration.
17- L16	Cybrids– production and applications,
18-L17	Artificial seed: production
19- P18	Plasmids – Ti plasmids
20- P19	Plasmids – Ti plasmids
21-P20	Plasmids – Ti plasmids
	Internal Test I begins
22- L21	Artificial seed: production, advantages and disadvantages
23- IT-1	**Internal Test-I**
24- L22	Artificial seed: production, advantages and disadvantages
25- L23	Classification of amino acids.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Techniques of genetic engineering:
28- L26	enzymes used in gene cloning
29- P27	Gene cloning in E. Coli.
30- P2	Gene cloning in E. Coli.
31-P28	Gene cloning in E. Coli.
32-L29	Cloning Vectors - Plasmids

33-L30	Cosmids and Phagemids
34- L31	cDNALibraries
35- L32	Agrobacterium mediated gene transfer in plants
36- L33	GM plants – Bt Brinjal, Bt Cotton, Golden rice. Bioethical issues.
37- P34	Agrobacterium mediated gene transfer. vi. Blotting Techniques
38-P35	Agrobacterium mediated gene transfer. vi. Blotting Techniques
39- P36	Agrobacterium mediated gene transfer. vi. Blotting Techniques
40- L37	Golden rice.
41- L38	Golden rice.
42-P3	Bioethical issues.
43- L39	Bioethical issues.
44- P40	Identification of Recombinants: Insertional inactivation, Blotting Techniques – Southern, Northern and Western Blotting.
45- P41	Immunochemical Method and Colony Hybridization Technique
46- P42	Selection of Recombinant using Selective Medium and reporter genes
47- L43	Blotting Techniques – Southern
	Internal Test II begins
48- L44	Blotting Techniques –Northern and Western Blotting
49-IT-II	**Internal Test-II**
50-L45	Blotting Techniques Western Blotting
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Mutagenesis& DNA transfer techniques: Natural-Conjugation and bacterial transformation.
53- P48	Site directed mutagenesis and random mutagenesis;
54- P49	Site directed mutagenesis and random mutagenesis;
55- P50	DNA transfer techniques: Physical method Microinjection
56- L51	Practical
57- L52	Bioenergetics of Chloroplast
58- L53	Mitochondria,
59-P4	**College level meeting/ function**
60- L54	Chemical method-Calcium phosphate method
61- L55	Electrical method Electroporation,
62- L56	Natural-Conjugation and bacterial transformation
63- L57	Natural-Conjugation and bacterial transformation
64- L58	Natural-Conjugation and bacterial transformation
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper**

	discussion
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	➢ To know the principle of Tissue Culture Laboratory
CO2	➢ To know the Meristem Culture and Artificial Seed.
CO3	➢ Basic knowledge about Techniques of genetic engineering
CO4	➢ To know about Identification of Recombinants
CO5	➢ To explain the concept of DNA transfer techniques.
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

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St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Horticulture and plant Breeding
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Mr. V.K Stanley Raja
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the Scope, importance and divisions of Horticulture
- To know the : Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components
- Basic knowledge Kitchen garden: Establishment, Organic manures and growth regulators in horticulture,
- To know about Plant Breeding Nature, Scope and Objectives
- To explain the concept of Mutation breeding: Procedure and practices, Mutagens

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 2A

HORTICULTURE & PLANT BREEDING (5hrs/week)

UNIT - I (14L)

Horticulture: Scope, importance and divisions, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.

UNIT - II (16L) Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets, water garden, terrarium, topiary and Bonsai.

UNIT - III (15L) Kitchen garden: Establishment, Organic manures and growth regulators in horticulture, Plant protection measures for horticulture, Seed Propagation methods, Preparation of Nursery beds, Transplantation – steps and Methods.

UNIT - IV (16L) Plant Breeding Nature, Scope and Objectives, Plant introduction, selection methods (pure line and mass), Hybridization techniques, Heterosis breeding, Interspecific and intergeneric hybridization.

UNIT – V (14L) Mutation breeding: Procedure and practices, Mutagens, Polyploidy breeding and its applications.Breeding for disease resistance.

PRACTICALS

Demonstration

i. Vegetative methods of propagation.

a. Cutting-Stem and Leaf cutting

b. Layering-Simple and air layering.

c. Grafting – Tongue grafting.

d. Budding – T-budding.

ii. Garden components -Rockery, hanging baskets, terrarium and topiary.

iii. Garden implements-spade, water can, pruning scissors, digging fork

iv. Designing Kitchen Garden.

v. Plant Breeding: Emasculation and Bagging methods

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin
1-L1	Horticulture: Scope, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.
2-L2	Horticulture: importance
3- L3	Horticulture: divisions
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Vegetative propagation methods- cutting,
8- L1	Vegetative propagation methods layering,
9- L8	Vegetative propagation methods- budding,
10- L9	Vegetative propagation methods- grafting
11-L10	. Vegetative propagation methods- vegetative propagules
12-P11	Unit 11 Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets,
13-P12	Formal Gardening
14-P13	Informal Gardening
15-L14	Design and Establishment of Garden
16-L15	Garden components
17- L16	garden implements
18-L17	lawn making
19- P18	glass house
20- P19	rockery
21-P20	hanging baskets
	Internal Test I begins
22- L21	water garden, terrarium, topiary and Bonsai.
23- IT-1	**Internal Test-I**
24- L22	Kitchen garden: Establishment,
25- L23	Organic manures and growth regulators in horticulture
26- L24	**Test Paper distribution and result analysis**

	Entering Internal Test-I Marks into University portal
27- L25	Plant protection measures for horticulture,
28- L26	Seed Propagation methods
29- P27	Preparation of Nursery beds
30- P2	Transplantation – steps
31-P28	Methods of Transplantation
32-L29	Plant Breeding Nature,.
33-L30	Scope and Objectives,
34- L31	Plant introduction, selection methods (pure line and mass),
35- L32	Hybridization techniques, Heterosis breeding
36- L33	, Interspecific
37- P34	Intergeneric hybridization
38-P35	Mutation breeding:
39- P36	Procedure and practices of
40- L37	Mutagens, Polyploidy breeding
41- L38	and its applications.Breeding for disease resistance.
42-P3	a. Cutting-Stem and Leaf cutting
43- L39	b. Layering-Simple and air layering.
44- P40	c. Grafting – Tongue grafting.
45- P41	d. Budding – T-budding.
46- P42	Garden components -Rockery,
47- L43	Garden components - hanging baskets
	Internal Test II begins
48- L44	terrarium and topiary.
49-IT-II	**Internal Test-II**
50-L45	Garden implements-spade,
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	ii. hanging baskets,
53- P48	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
54- P49	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
55- P50	Plant Breeding: Emasculation and Bagging methods
56- L51	Plant Breeding: Emasculation and Bagging methods
57- L52	
58- L53	
59-P4	**College level meeting/ function**
60- L54	Garden components
61- L55	iii. Garden implements
62- L56	
63- L57	
64- L58	
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical

69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	To know the Scope, importance and divisions of Horticulture
CO2	To know the : Types of gardens – Formal
CO3	Basic knowledge Kitchen garden: Establishment
CO4	To know about Plant Breeding Nature
CO5	To explain the concept of Mutation breeding: Procedure and practices
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

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Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Morphology and Taxonomy of Angiosperms
Course Code	JMPB51
Class	III year (2018-2019)
Semester	Odd
Staff Name	Dr. M. Amutha
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the morphology of the plant parts.
- To know the structure of various types of inflorescences, floral parts, and fruits.
- Basic knowledge about taxonomy and classification of angiosperm plants.
- To study about binomial nomenclature.
- To know about angiosperm families.
- To study the preparation of dichotomous key.
- To know about the useful plant parts and their uses.

Syllabus

UNIT 1 Morphology_ Modification of Root, Stem and Leaf. Leaf - Simple, Compound; Phyllotaxy; Inflorescence – Types; Flower- Floral parts; Fruits- Types.

UNIT 11 Principles of taxonomic Hierarchy (Order, Family, Genus and Species Level). Systems of classification (with merits and demerits) – Natural – Benthem aqnd Hooker system, Phylogenetic – Engler and Prantl System; Binomial nomenclature – ICBN, Dichotomous key, Preparation, Maintenance and significance of Herbarium.

UNIT 111 Critical study of the following Families and their Economic importance: Annonaceae, Sterculiaceae, Rutaceae, Caesalpiniaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Sapotaceae.

UNIT IV Convolvulaceae, Asclepiadaceae, Apocynaceae, Lamiaceae, Euphorbiaceae, Amaranthaceae, Liliaceae, Cannaceae and Poaceae.

UNIT V Binomial, Family, Useful part and Uses of the Following Plant Products: Fibres- Jute, Cotton and Hemp; Timber- Teak, Rosewood and Neem; Resin – Camphor and Canada balsam; Cosmeticsb- *Aloe*, Sandal wood Turmeric; Beverages – Tea, Coffee and *Cocoa*; Oil – Coconut oil, Eucalyptus oil and *Pongamia* oil; Fruits and Vegetables- Banana, Jackfruit, Pineapple; Medicinal plants – *Adatoda*, Clove and *Acorus calamus*

PRACTICALS:

1. Morphological identification of plant parts and their modifications.

2. Technical description of plant parts and dissection of floral parts of plants with reference to the families prescribed in the syllabus.

3. Field trips (minimum 2 days) to places under the guidance of teachers to study plants in their natural habitat and submit a report.

4. Preparation of dichotomous key.

5. Identify and comment on the useful plant parts or plants prescribed in the syllabus.

6. Preparation and submission of 10 herbarium sheets.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of morphology
2-L2	Brief account on root modification,
3- L3	Stem and Leaf modification.
4-P4	Practical
5-P5	Practical – Morphology modifications.
6-P6	Practical
7-L7	Brief account about phyllotaxy.
8- L1	Inflorescence.
9- L8	Fruits – Types.
10- L9	Taxanomical Hierarchy.
11-L10	Brief study about Natural classification.
12-P11	Practical

13-P12	Practical – Dissectout Annonaceae, Sterculiaceae.
14-P13	Practical
15-L14	Phylogenetic system of Classification.
16-L15	ICBN
17- L16	Dichotomous key preparation.
18-L17	Preparation steps of Herbarium
19- P18	Practical
20- P19	Practical – Dissectout Rutaceae and Caesalpiniaceae.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Annonaceae
25- L23	Sterculiaceae
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Cucurbitaceae
28- L26	Apiaceae
29- P27	Practical
30- P2	Practical – C Apiaceae, Covolvulaceae
31-P28	Practical
32-L29	Caesalpiniaceae
33-L30	Sapotaceae
34- L31	Rubiaceae
35- L32	Convolvulaceae
36- L33	Asclepiadaceae
37- P34	Practical
38-P35	Practical – Rubiaceae, Sapotaceae , Apocynaceae
39- P36	Practical
40- L37	Lamiaceae
41- L38	Euphorbiaceae
42-P3	Amaranthaceae
43- L39	Cannaceae
44- P40	Practical
45- P41	Practical – Euphorbiaceae, Asclepiadaceae
46- P42	Practical
47- L43	Liliaceae
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Uses of Fibres.
53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Lamiaceae, Cannaceae, Poaceae
56- L51	Practical

57- L52	Timber
58- L53	Resin
59-P4	**College level meeting/ function**
60- L54	Cosmatics
61- L55	Beverages
62- L56	Oil
63- L57	Fruits and vegetables
64- L58	Medicinal plants
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Amaranthaceae, Cannaceae, Liliaceae
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about angiospermic plants.
CO2	Know about angiospermic plants
CO3	Know about the different dicot and monocot plants.
CO4	To learn about different floral parts.
CO5	To know about different economic importance of plants.
CO6	To know about uses of various oils, timbers, bevarages etc.
CO7	To know about uses of medicinal plants.
CO8	To know about classification of plants.
CO9	To know about herbarium preparation.
Experimental Learning	
EL1	Know about dichotomous key preparation.
EL2	Know about how to idendify the dicot and monocot plants.
EL3	Know about taxonomical hierarchy.
EL4	Know about differentiation of floral parts.
Integrated Activity	
IA1	To visit different fields to study the plants in their natural habitat.
IA2	To attended two days study tour about Taaxonomy.

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Plant Physiology
Course Code	GMPB61
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. Mr. D. Abiya Chelliah
Credits	6
L. Hours /P. Hours	6 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the physiology of the plans.

- To know the structure of various types of stomata, chloroplast, and phytohormons .
- Basic knowledge about physiology and classification of macro nutrients and micronutrients.
- To study about C3, C4 and CAM pathways.
- To know about translocation of organic solutes.
- To study the transpiration pull and cohesion theory.
- To know about various phytohormones and their uses.

Syllabus

UNIT I

WaterRelationsof Plants&Transpiration: Water Relations: Imbibition, Diffusion and Osmosis; Water Potential- Definition, Components, Absorption of Water – Mechanism and Factors affecting Water Absorption; TranspirationDefinition, Types, Significance and Mechanism of Stomatal Transpiration- steps and theories, Guttation

UNIT II

Ascent of Sap&Mineral nutrition: Ascent of Sap –Definition, Path of Ascent of Sap, Mechanism- Transpiration Pull and Cohesion Theory.Mineral nutrition - Macro and Micro Nutrients-Absorption of Mineral Salts – Mechanism, Translocation of Organic Solutes - Mechanism of Phloem Transport (Munch‟s Mass flow hypothesis).

UNIT III

Photosynthesis&.Respiration: Photosynthesis:Light and Dark Reactions - Photosynthetic Electron Transport Chain and Photophosphorylation (Cylic and Non cyclic); Carbon Assimilation - C3, C4 and CAM Pathways andits Significance;Respiration: Glycolysis, TCA cycle and Oxidative Phosphorylation.

UNIT IV

Growth and Development: Growth Curve and phases of growth;Phytohormones:Physiological Effect and Practical Applications - Auxin, Gibberellic acid, Cytokinin, Ethylene and Abscisicacid;Photoperiodism and Vernalization.

UNIT V

Seed Dormancy: Causes and Methods ofBreaking Dormancy; Stress Physiology - Classification– Bioticand Abiotic, Stress Factors- Response of Plants to Salt, Drought, Frost and Heat

PRACTICALS

1. Water Potential by Gravimetric Method.

2. Water Potential by Falling Drop Method.

3. Osmotic Potential by Plasmolytic Method.

4. Rate of Photosynthesis in Different Concentrations of Bi-Carbonate – Bubble Method.

5. Measurement of Stomatal Index.

6. Effect of Temperature on Permeability of Plasma Membrane.

7. Separation of Chlorophyll Pigments by Ascending Paper Chromatography.

DEMONSTRATION: 1. Tissue Tension

2. Suction due to Transpiration

3. Ganong‟ sPhotometer

4. Fermentation

5. Arc Auxanometer

6. Clinostat

7. Phototropism

Spotters

1. Absorption Spectrum of Chlorophylls

2. Growth curve. To maintain a record note book.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of Imbibition
2-L2	Brief account on Diffusion,
3- L3	Osmosis , Water Potential and Water Absorption.
4-P4	Practical
5-P5	Practical – Water Potential by Gravimetric method
6-P6	Practical
7-L7	Brief account on Transpiration
8- L1	Mchanism of Stomatal Traspiration
9- L8	Significance of Transpiration.

10- L9	Ascent of sap
11-L10	Brief study about Path of Ascent of sap.
12-P11	Practical
13-P12	Practical – Water Potential by Falling Drop Method.
14-P13	Practical
15-L14	Study about Transpiration Pull Cohesion Thory.
16-L15	Mineral Nutrition
17- L16	Various types of Macronutrients.
18-L17	Different types of micronutruients.
19- P18	Practical
20- P19	Practical – Osmotic Potential by Plasmolytic Method.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Absorption of Mineral Salts.
25- L23	Study about Translocaton of Organic solutes.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Mechanism of Phloem Transport.
28- L26	Study about Light and Dark Reactions.
29- P27	Practical
30- P2	Practical – Quantitative Estimation of Total Chloophyll Content in Leaves.
31-P28	Practical
32-L29	Study about Electron Transport Chain.
33-L30	Photophosphorylation
34- L31	C3 Cycle
35- L32	C4 Cycle
36- L33	CAM Pathway.
37- P34	Practical
38-P35	Practical – Quantitative Estimation of Carotenoid Content in Flowers.
39- P36	Practical
40- L37	Photorespiration.
41- L38	Glycolysis
42-P3	TCA Cycle
43- L39	Study about Oxidative Phosphorylation
44- P40	Practical
45- P41	Practical – Rate of Photosynthesis in Different Concentrations of Bi-Carbonate-Bubble Method.
46- P42	Practical
47- L43	Study about Growth and Growth Curve
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Different Phases of Growth Curve.

53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Measurement of Stomatal Index.
56- L51	Practical
57- L52	Growth Hormones.
58- L53	Auxin and Gibberellic Acid
59-P4	**College level meeting/ function**
60- L54	Cytokinin, Ethylene and Absisic acid
61- L55	Various methods of Seed Dormancy and Breaking of Seed Dormancy.
62- L56	Stress Physiology
63- L57	Biotic and Abiotic Factors of Stress
64- L58	Differentiate Photoperiodism and Vernalization.
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Effect of Temperature on Permeability of Plasma Membrane.
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about Physiology of plants.
CO2	Know about absorption mechanism of plants.
CO3	Know about the different mechanism of Stomatal Transpiration in Plants.
CO4	To learn about differen kind of Photophosphorylations.
CO5	To know about Oxidative Phosphorylation..
CO6	To know about uses of Auxin, Gibbrellic Acid, Cytokinin etc.
CO7	To know about Photoperiodism and Vernalisation.
CO8	To know about Seed Dormancy.
CO9	To know about Stress Physiology.
Experimental Learning	
EL1	Know about Stomatal Index.
EL2	Know about how to Measure the Photosynthetic Rate.
EL3	Know about Stomatal Index.
EL4	Study about Water Potential.

Integrated Activity	
IA1	Study about Osmosis.
IA2	To study Tissue Tension.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Plant Anatomy and Micro Techniques
Course Code	SMBO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Meristems and theories of meristem tissue
- To discuss the type and function of simple and permanent tissue
- To explain the internal structure of moncot and dicot root stem and leaves
- To describe the normal and secondary thickening in dicot stem and root
- To illustrate the Nodal anatomy
- To describe the principles of Microscope.
- To describe the working nature of Light and Electron Microscope (TEM only)
- Explain types of staining techniques and Maceration techniques

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core – I
PLANT ANATOMY AND MICRO TECHNIQUES
(4 hrs/week)

UNIT –I **12Hrs**

Meristems – Characteristics of meristematic tissues – Types, functions and Theories of meristems. Structure and functions of simple and permanent tissues – parenchyma, collenchyma, sclerenchyma, xylem and phloem.

UNIT – II **12Hrs**

Structure of dicot stem and root, structure of monocot stem and root, structure of dicot and monocot leaves.

UNIT – III **12Hrs**

Normal secondary thickening in dicot stem and root, anomalous secondary growth in the stem of *Boerhaavia*and *Dracaena*.

UNIT – IV **12Hrs**

Nodal anatomy: Types of nodes – unilocular, trilocular and multilocular; leaf traces and leaf gaps; epidermal tissue system: stomatal types, hair, trichomes and glands.

UNIT – V **12Hrs**

Microscopy: Principle and working of simple and compound light microscopes and electron microscope (TEM only). Micro techniques – simple staining, double staining and preparation of permanent slides – Maceration

PRACTICALS:

1. To observe and identify the following slides showing
    a. Meristems – shoot apex and root apex
    b. Simple tissues
    c. Xylem elements
2. Primary structure of stem, root and leaves of dicot and monocot plant.
3. Normal secondary thickening in dicot stem and root.
4. Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
5. Maceration technique (Xylem elements only)
6. Demonstration: Preparation of double stained permanent slides.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Meristems – Characteristics of meristematic tissues
2-L2	Theories of meristems
3- L3	Types and functions of meristems
4-L4	Structure and functions of simple Tissue
5-L5	Structure and functions of parenchyma, collenchymas and sclerenchyma
6-L6	Structure and functions of Permanent tissue
7-L7	Structure and functions of xylem
8-L8	Structure and functions of phloem.
9-L9	UNIT II, Structure of dicot stem
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Structure of dicot root
12-L11	Structure of monocot stem
13-L12	Structure of monocot root
14-L13	Structure of dicot leaves.
15-L14	Structure of monocot leaves.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Explain the Secondary Thickening
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Secondary Thickening in dicot stem
21-P2	**College level meeting / Cell function**
22-L19	Explain the Secondary Thickening in dicot root
23-L20	Explain the process of secondary thickening
24-L21	Describe the concept of Cambium formation
25-L22	Analysis the role of secondary tissue formation
26-L23	Determine the functions of secondary tissue

27-L24	Explain the concept of anomalous Secondary growth
28-L25	Explain the anomalous Secondary growth in *Boerhaavia*
29-L26	Explain the anomalous Secondary growth in *Dracaena*
30-L27	UNIT IV, Explain what is Nodal anatomy
31-L28	To give an account on node and Types of node
32-L29	Unilocular node, Trilocular node, multilocular node, Leaf traces and Leaf gaps
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Epidermal Tissue system - Stomatal types, Epidermal Hair and Trichomes
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Working Principles of simple Microscope
39-L34	Working Principles of compound light Microscope
40-L35	Working Principles of Electron Microscope (TEM only)
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Micro Technique – Simple staining
44-L38	Micro Technique – Double staining
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Permanent slide
47-L41	Maceration
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Microscopy Techniques
50-L44	Recall the Micro Techniques (Simple staining, Double staining, Preparation of Permanent slide and Maceration
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To know the concept of Meristems and theories of meristem tissue
CO2	To know the type and function of simple and permanent tissue
CO3	To know the internal structure of moncot and dicot root stem and leaves
CO4	To know the normal and secondary thickening in dicot stem and

	root
CO5	To know the Nodal anatomy
CO6	To know the principles of Microscope.
CO7	To know the working nature of Light and Electron Microscope (TEM only)
CO8	To know types of staining techniques
CO9	To know the Maceration techniques
Experimental Learning	
EL1	To know the internal structure of meristems and simple tissue
EL2	Primary structure of stem, root and leaves of dicot and monocot plant.
EL3	Normal secondary thickening in dicot stem and root.
EL4	Anomalous secondary growth in *Boerhaavia* and *Dracaena*.
EL5	Maceration technique (Xylem elements only) and Demonstration: Preparation of double stained permanent slides.
Integrated Activity	
IA1	Prepare model of Xylem elements
IA2	Preparation of double stained permanent slides for Dicot stem and root

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Algae and Bryophytes
Course Code	SMBO12
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Plant Diversity and Medicinal Botany
Course Code	SABO11
Class	I year (2017 - 2018)
Semester	Odd, I Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the General characteristic features of Algae
- To discuss the Life cycle patterns in Algae
- To explain the Economic importance of Algae
- To describe the reproduction in Algae
- To understand the General characteristic features of Bryophytes
- To discuss the Life cycle patterns in Bryophytes
- To explain the Economic importance of Bryophytes
- To describe the reproduction in Bryophytes

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – I / Core - 2
ALGAE AND BRYOPHYTES
(4 hrs/week)

UNIT –I **12Hrs**

General characters and classification of Algae based on Fritsch (1945), life cycle patterns of Algae, systematic position, distribution, structure, reproduction and life history of *Volvox* and *Caulerpa* .

UNIT – II **12Hrs**

Systematic position, distribution, structure, reproduction and life history of *Chara, Sargassum* and *Gracilaria*.

UNIT – III **12Hrs**

Seaweed cultivation – *Gracilaria*; Methods of extraction and uses of agar-agar and carrageenin; Economic importance of Algae.

UNIT – IV **12Hrs**

Morphology, mass culture and nutritive importance of *Spirulina*; Morphology, mass culture and economic importance of *Nostoc.*

UNIT – V **12Hrs**

General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*

PRACTICALS

1. Study of morphology of the Algae and Bryophytes prescribed in the syllabus.
2. Make suitable micro preparations of the following:
    a. *Caulerpa*– Rhizome
    b. *Sargassum* - Stipe, leaf
    c. *Gracilaria*–Thallus with cystocarpd. *Marchantia* – Thallus.
3. Observe and identify the microslides
    a. Volvox - Vegetative colony, colony with daughter colonies and sexorgans.
    b. Chara - Sex organs
    c. *Sargassum* - Male and female conceptacles
    d. *Gracilaria* - Thallus with cystocarp.
    e. *Marchantia* – V.S of Gemma cup, V.S of Antheridiophore, V.S of Archegoniophore, V.S of Sporophyte
    f. Algal Slides/ Tablet - *Spirulina, Nostoc*; BGA – fertilizer (packet);.
4. Field trip of minimum one day.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, General characters of Algae
2-L2	classification of Algae based on Fritsch (1945)
3- L3	Life cycle patterns of Algae
4-L4	systematic position, distribution, structure of *Volvox*
5-L5	Reproduction in *Volvox*
6-L6	Life history of *Volvox*
7-L7	systematic position, distribution, structure of *Caulerpa*
8-L8	Reproduction in *Caulerpa*
9-L9	Life history of *Caulerpa*
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Systematic position, distribution, structure of *Chara*
12-L11	Reproduction and life history of *Chara*
13-L12	Systematic position, distribution, structure, reproduction and life history of *Sargassum*
14-L13	Reproduction and life history of *Sargassum*
15-L14	Systematic position, distribution, structure, reproduction and life history of *Gracilaria*.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Introduction about Seaweed cultivation
	Entering Internal Test-I Marks into University portal
20-L18	Explain the Cultivation of *Gracilaria*;

21-P2	**College level meeting / Cell function**
22-L19	Methods of extraction of agar-agar
23-L20	Uses of agar-agar
24-L21	Methods of extraction of carrageenin
25-L22	Uses of carrageenin
26-L23	Economic importance of Algae.
27-L24	Unit IV, Single cell Protein
28-L25	Morphology of *Spirulina*
29-L26	Mass culture of *Spirulina*
30-L27	Nutritive importance of *Spirulina*
31-L28	Morphology of *Nostoc*.
32-L29	Mass culture of *Nostoc.*
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Economic importance of *Nostoc.*
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, General characters and classification of Bryophytes by Rothmaler (1951); systematic position, distribution, structure, reproduction and life history of *Marchantia.*
39-L34	Classification of Bryophytes by Rothmaler (1951)
40-L35	Systematic position and distribution of *Marchantia.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Structure of *Marchantia.*
44-L38	Reproduction of *Marchantia.*
45-L39	**Submission of Assignment / takeing the seminar**
46-L40	Life history of *Marchantia.*
47-L41	Economic importance of Bryophytes
48-L42	**Allotting portion for Internal Test-III**
49-L43	Recall the Life cycle of *Marchantia.*
50-L44	Recall the Sexual and asexual reproduction in *Marchantia.*
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Algae and Bryophytes"
CO1	To know the general characteristic features of Algae
CO2	To discuss the Life cycle patterns in Algae
CO3	To explain the Economic importance of Algae
CO4	To describe the reproduction in Algae
CO5	To know the general characteristic features of Bryophytes
CO6	To discuss the Life cycle patterns in Bryophytes
CO7	To explain the Economic importance of Bryophytes
CO8	To describe the reproduction in Bryophytes
Experimental Learning	
EL1	To know the General character of Algae and Bryophytes
EL2	Micro Preparation of *Caulerpa, Sargassum and Gracilaria*
EL3	Micro Preparation of *Marchantia*
EL4	To know the structure of life cycle pattern of *Caulerpa, Sargassum and Gracilaria*
EL5	To know the structure of life cycle pattern of *Marchantia*
Integrated Activity	
IA1	Preserve the Algal species in the formalin solution
IA2	Preparation of double stained permanent slides for *Spirulina*

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Fungi, Plant Pathology and Lichenology
Course Code	SMBO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. V.K Stanley Raja
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To recognize the General characteristic feature of Fungi
- To explain the classification of fungi
- To understand the economic importance of Fungi
- To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
- To understand the plant diseases
- To recognize the General characteristic feature of Lichen
- To explain the classification of Lichen
- To understand the economic importance of Lichen
- To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 3

FUNGI, PLANT PATHOLOGY AND LICHENOLOGY (4 hrs/week)

UNIT I **12Hrs**

General characters and classification of fungi based on Alexopoulous (1962). occurrence, systematic position, structure, reproduction and life cycle of Albugo and Mucor.

UNIT II **12Hrs**

Occurrence, systematic position, structure, reproduction and life cycle of Peziza and Puccinia. Economic importance of fungi: Role of fungi in medicine, industry, agriculture, food and food products.

UNIT III **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Tikka disease of groundnut, Red rot of sugarcane; Paddy blast.

UNIT IV **12Hrs**

Study of the following plant diseases with special reference to the symptoms, etiology, dissemination and control measures: Citrus canker, Bunchy top disease of Banana and Tobacco Mosaic viral disease.

UNIT V **12Hrs**

Lichens: General account, types and economic importance of Lichens. Structure and reproduction with special reference to *Usnea.*

PRACTICALS

1. Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.

2. Spotters:

i. Slides - *Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus and Teleutosorus

ii. Disease infected leaves showing Albugo and Puccinia; Usnea habit

iii. Observe and identify the following Plant diseases.

a. Tikka disease of Groundnut

b. Red Rot of Sugarcane

c. Paddy Blast

d. Citrus Canker

e. Bunchy Top of Banana

f. Tobacco Mosaic Viral disease

5. Maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I,** General characters of fungi
2-L2	Classification of fungi based on Alexopoulous (1962).
3- L3	occurrence, systematic position Albugo
4-L4	Structure Albugo
5-L5	Reproduction Albugo
6-L6	life cycle of Albugo
7-L7	occurrence,
8-L8	systematic position of Mucor.
9-L9	Structure of Mucor.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Reproduction of Mucor.
12-L11	life cycle of Mucor.
13-L12	**UNIT II** Occurrence, systematic position, structure, reproduction and life cycle of Peziza
14-L13	Occurrence, systematic position, structure, reproduction and life cycle of Puccinia.
15-L14	Economic importance of fungi
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	**UNIT III,** Introduction to plant diseases
	Entering Internal Test-I Marks into University portal
20-L18	Tikka disease of groundnut with special reference to the symptoms, etiology, dissemination and control measures.
21-P2	**College level meeting / Cell function**
22-L19	Red rot of sugarcane with special reference to the symptoms
23-L20	Red rot of sugarcane with special reference to etiology and dissemination
24-L21	Red rot of sugarcane with special reference to control measures:
25-L22	Paddy blast with special reference to the symptoms and etiology
26-L23	Dissemination and control measures of Paddy blast
27-L24	**UNIT IV** Citrus canker disease with special reference to the symptoms
28-L25	Citrus canker with special reference to etiology and dissemination
29-L26	Bunchy top disease of Banana with special reference to the symptoms
30-L27	Bunchy top disease of Banana with special reference to etiology and dissemination
31-L28	Tobacco Mosaic viral disease with special reference to the symptoms
32-L29	Tobacco Mosaic viral disease with special reference to etiology and dissemination
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	**UNIT V** Lichens: General account,
36-L32	**Allotting portion for Assignment/seminar**

37-IT-II	**Internal Test-II**
38-L33	Types of Lichen.
39-L34	Economic importance of Lichens
40-L35	Occurrence of *Usnea.*
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Systematic position of *Usnea.*
44-L38	Structure of *Usnea.*
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Reproduction of *Usnea.*
47-L41	Economic importance of *Usnea.*
48-L42	**Allotting portion for Internal Test-III**
49-L43	Economic importance of Lichen
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "**Fungi, Plant Pathology and Lichenology**"
CO1	To recognize the General characteristic feature of Fungi
CO2	To explain the classification of fungi
CO3	To understand the economic importance of Fungi
CO4	To Know occurrence, systematic position, structure, reproduction and life cycle in fungi
CO5	To understand the plant diseases
CO6	To recognize the General characteristic feature of Lichen
CO7	To explain the classification of Lichen
CO8	To understand the economic importance of Lichen
CO9	To Know occurrence, systematic position, structure, reproduction and life cycle in Lichen
Experimental Learning	
EL1	To know the Micro preparation and identification of *Peziza, Puccinia* and Lichen thallus.
EL2	*Albugo, Mucor, Usnea*- VS of apothecium, Puccinia – Uredosorus

	and Teleutosorus.
EL3	Prepare the permanent slide
EL4	Preserve the plant Disease
Integrated Activity	
IA1	Prepare the permanent slide
IA2	Preserve the plant Disease

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Cell Biology & Embryology of Angiosperms
Course Code	SMBO 22
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of prokaryotic and eukaryotic cell
- To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
- Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
- Structure of Microsporoangium, Megasporogenesis
- To understand the Double fertilization process

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester – II / Core - 4

CELL BIOLOGY & EMBRYOLOGY OF ANGIOSPERMS (4 hrs/week)

UNIT I Cell Biology: Structure of a Plant cell – prokaryotic and eukaryotic cell, structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.

UNIT II Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.

UNIT III Non-living inclusions - cystolith, raphides, starch grains. Cell Division: Mitosis and Meiosis.

UNIT IV Embryology : Structure of Microsporoangium, microsporogenesis, development of male gametophyte. Types and structure of megasporangium, Megasporogenesis, development of female gametophyte, Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type

UNIT V Double fertilization, types of endosperm – nuclear, cellular and helobial; Ruminate endosperm.Structure and Development of dicot embryo (Capsella) and Polyembryony.

PRACTICALS

Cell Biology

1. Mitosis using Onion roots.
2. Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
3. Non-living inclusions – Starch grains, Cystolith and Raphides.

Embryology of Angiosperms

1. Dissect out any one stage of embryo.
2. Identification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony
3. Specimen – Ruminate endosperm

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16-6-2018
1-L1	**UNIT I** Introduction about Cell Biology
2-L2	Structure of a Plant cell
3- L3	Structure of prokaryotic and eukaryotic cell
4-L4	structure of cell wall
5-L5	Functions of cell wall
6-L6	Structure of plasma membrane
7-L7	Functions of plasma membrane
8-L8	Structure and Functions of endoplasmic reticulum
9-L9	Structure and Functions of ribosome.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II Structure of Mitochondria
12-L11	Functions of Mitochondria
13-L12	Structure and functions of Chloroplast
14-L13	Structure and functions of Nucleus
15-L14	Structure and functions of Chromosome.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Non-living inclusions Introduction
	Entering Internal Test-I Marks into University portal

20-L18	Cystolith
21-P2	**College level meeting / Cell function**
22-L19	Raphides
23-L20	Starch grains
24-L21	Cell Division Introduction
25-L22	Mitosis
26-L23	Meiosis. I
27-L24	Meiosis. II
28-L25	UNIT IV, Embryology Introduction
29-L26	Structure of Microsporoangium
30-L27	Microsporogenesis
31-L28	Development of male gametophyte
32-L29	Types and structure of megasporangium
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Development of female gametophyte
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Types of embryo sac:Monosporic – Polygonum type; Bisporic – Allium type; Tetra sporic - Peperomia type
39-L34	UNIT V, Double fertilization
40-L35	Types of endosperm
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Nuclear and Cellular endosperm
44-L38	Helobial endosperm
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Ruminate endosperm
47-L41	Development of dicot embryo
48-L42	**Allotting portion for Internal Test-III**
49-L43	Polyembryony.
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Cell Biology & Embryology of Angiosperms"
	To understand the concept of prokaryotic and eukaryotic cell
CO1	To know the concept of structure and functions of cell wall, plasma membrane, endoplasmic reticulum and ribosome.
CO2	Structure and functions of Mitochondria, Chloroplast, Nucleus, Chromosome.
CO3	Structure of Microsporoangium, Megasporogenesis
CO4	To understand the Double fertilization process
Experimental Learning	
EL1	Mitosis using Onion roots.
EL2	Electro micrographs of cell organelles – Chloroplast, Mitochondria and Nucleus.
EL3	Non-living inclusions – Starch grains, Cystolith and Raphides.
EL4	dentification of slides/specimen/photographs showing the C.S of mature anther, Ovules-orthotropous and anatropous; dicot embryo and Polyembryony Ruminate endosperm
Integrated Activity	
IA1	Prepare of Nucleus
IA2	Fixing of Mitosis using Onion roots.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

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Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Zoology
Course Name	Embryology, Plant Anatomy, Physiology and Biotechnology
Course Code	SABO21
Class	I year (2017 - 2018)
Semester	Even, II Semester
Staff Name	1.Mr. S. Darwin Paul Edison 2. Mr. S. Paul David Selson
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Structure and development of microsporangium and megasporangium.
- To explain the concept of Double fertilization,
- To explain the Meristem - Structure and classification
- To know the function of simple and complex tissue
- To Explain the Photosynthesis
- To understand the process of Transpiration Absorption of water Ascent of sap
- To know the Tissue Culture – Scope and importance
- Mass culture of Nostoc and Yeast

MSU/ 2017-18 / UG-Colleges /Part-III (B.Sc.Botany) / Semester-II / Allied –II

Semester II/IV

EMBRYOLOGY, PLANT ANATOMY, PHYSIOLOGY AND BIOTECHNOLOGY
4hrs/week

UNIT – I Structure and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.

UNIT – II Meristem - Structure and classification. Simple tissues, complex tissues; Primary structure of Dicot and Monocot stem and root; Structure of leaf; Normal secondary thickening in dicot stem.

UNIT – III Absorption of water – diffusion, osmosis, imbibition, mechanism of absorption of water; Ascent of sap – (cohesion theory only); Transpiration – Types, Mechanism of stomatal transpiration (Starch – sugar hypothesis); Photosynthesis importance of photosynthesis, Mechanism of Photosynthesis – Light and dark reaction (Calvin cycle).

UNIT – IV Nostoc - Morphology, Use as Biofertilizerand Mass cultivation; Structure,multiplication (budding and fission) and Mass culture of Yeast.

UNIT – V Tissue Culture – Scope and importance - totipotency, Nutrient media(M.S medium) Callus and Meristem Culture; Applications of plant tissue culture.

PRACTICAL – 2

1) Dissect out young embryo from Tridax flower bud.

2) Make suitable micro-preparations of dicot and monocot stem, root

3) Demonstrate the physiology experimental set up –Potato osmoscope, Ganong's light screen, Bell jar experiment

4)) Identify the Photograph/ Slide/ Specimen/setup

(i) Nostoc

(ii) Yeast

(iii) Callus culture,

(iv) Meristem culture.

6) Maintain a record note book for external and internal evaluation

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Structure of microsporangium and development of microsporangium; Structure, types and development of megasporangium; Development of male and female gametophyte; Double fertilization, Endosperm – types, Structure of dicot embryo.
2-L2	Development of microsporangium
3- L3	Structure and types of megasporangium
4-L4	development of megasporangium
5-L5	Development of male gametophyte

6-L6	Development of female gametophyte
7-L7	Double fertilization
8-L8	Endosperm – types.
9-L9	Structure of dicot embryo.
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	UNIT II II Meristem - Structure and classification
12-L11	Simple tissues, complex tissues
13-L12	Monocot stem and root
14-L13	Dicot stem and root
15-L14	Normal secondary thickening in dicot stem.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III, Absorption of water – diffusion
	Entering Internal Test-I Marks into University portal
20-L18	Osmosis and imbibition
21-P2	**College level meeting / Cell function**
22-L19	mechanism of absorption of water; Ascent of sap – (cohesion theory only)
23-L20	Transpiration – Types
24-L21	Mechanism of stomatal transpiration (Starch – sugar hypothesis);
25-L22	Importance of photosynthesis
26-L23	Mechanism of Photosynthesis
27-L24	Light and dark reaction (Calvin cycle).
28-L25	Light and dark reaction (Calvin cycle).
29-L26	Light and dark reaction (Calvin cycle).
30-L27	**UNIT IV** Nostoc - Morphology,
31-L28	Use as Biofertilizer
32-L29	Structure and multiplication (budding and fission) of Yeast
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Mass culture of Yeast.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	UNIT V, Tissue Culture Introduction
39-L34	Tissue Culture – Scope
40-L35	Tissue Culture –importance
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Totipotency
44-L38	Nutrient media(M.S medium)
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Callus Culture
47-L41	Meristem Culture
48-L42	**Allotting portion for Internal Test-III**
49-L43	Applications of plant tissue culture.
50-L44	Applications of plant tissue culture.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Embryology, Plant Anatomy, Physiology and Biotechnology"
CO1	To understand the Structure and development of microsporangium and megasporangium.
CO2	To explain the concept of Double fertilization,
CO3	To explain the Meristem - Structure and classification
CO4	To know the function of simple and complex tissue
CO5	To Explain the Photosynthesis
CO6	To understand the process of Transpiration Absorption of water Ascent of sap
CO7	To know the Tissue Culture – Scope and importance
CO8	Mass culture of Nostoc and Yeast
Experimental Learning	
EL1	Make suitable micro-preparations of dicot and monocot stem
EL2	Demonstrate the physiology experimental set up –Potato osmoscope
EL3	Ganong's light screen, Bell jar experiment
EL4	(i) Nostoc (ii) Yeast (iii) Callus culture, (iv) Meristem culture.
Integrated Activity	
IA1	Preserve the permanent slide for Mocot , dicot stem and root
IA2	Preparation of mass culture of Yeast and Nostoc

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Organic Farming
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mr. V.K Stanley Raja 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the soil Profile
- To discuss the Organic Matter
- To explain the Soil Air and water
- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
- To explain the Green Manure: Plant wastes
- To explain the Biofertilizers
- Explain the Vermicomposting:

MSU/2017-18/ B. Sc Botany / Semester –III
Skill Based Subject -I (B) ORGANIC FARMING (4hrs/week)

Unit –I **(11hr)**
Soil Science: Brief Account of Soil Profile, Fertility of Soil – Importance of Organic Matter – Water Retentivity and Aeration of Soil.

Unit – II: **(12hr)**
Manure and Manuring: Organic Manure, Types, Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.

Unit – III **(10 hr)**
Green Manure: Plant wastes – Fallen leaves and Twigs, Humus Formation, Green Manuring, Mulching - Leaves of Trees like Pongamia, Gliricidia ,Azadirachta,andCalotropis, Compost making.

Unit-IV **(13hr)**

Biofertilizers: Rhizobium-Importance, Mass Production and Application, VAM Fungi – Importance, Mass production and Applications.

Unit–V **(14hr)**

Vermicomposting: Importance, Application and Production of Vermicompost, Preparation and importance of Panchagavyaas foliar spray

PRACTICALS:

21. To make suitable micro preparations of the following: Lycopodium Stem,
    Adiantum Stipe,
    Marsilea Petiole,
    Rhizome and Sporo carp.
    Pinus Stem and Needle,
    Gnetum Stem and Leaf.
22. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

    Paleobotany (Slide):
    Rhynia stem
    Lepidodendron stem
    Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Soil Science: Introduction
2-L2	Brief Account of Soil Profile
3- L3	Fertility of Soil
4-L4	Importance of Organic Matter
5-L5	Water Retentivity
6-L6	Aeration of Soil.
7-L7	UNIT II Manure and Manuring: Introduction, , Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
8-L8	Organic Manure
9-L9	Organic Manure Types
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Animal Wastes – Cattle Dung and Urine
12-L11	Poultry Wastes
13-L12	Slaughter Wastes
14-L13	Piggery Wastes
15-L14	Fishery Wastes
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**

18-L16	**Test Paper distribution and result analysis-**
19-L17	UNIT III Green Manure: Plant wastes
	Entering Internal Test-I Marks into University portal
20-L18	Plant wastes – Fallen leaves and Twigs
21-P2	**College level meeting / Cell function**
22-L19	Humus Formation
23-L20	Green Manuring
24-L21	Mulching - Leaves of Trees like Pongamia
25-L22	Mulching - Leaves of Trees like Gliricidia
26-L23	Azadirachta
27-L24	Calotropis
28-L25	Compost making
29-L26	Biofertilizers: Rhizobium-Importance
30-L27	Mass production of VAM
31-L28	Mass production of VAM
32-L29	Applications of VAM
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Vermicomposting:
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Importance of Vermicomposting
39-L34	Vermiculture
40-L35	Production of Vermicompost Indoor
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Production of Vermicompost Out door
44-L38	Preparation of Panchagavyaas
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Preparation of Panchagavyaas
47-L41	Application of Panchagavyaas
48-L42	**Allotting portion for Internal Test-III**
49-L43	Dosage of Panchagavyaas
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the soil Profile
CO2	➢ To discuss the Organic Matter
CO3	➢ To explain the Soil Air and water
CO4	➢ To Discuss the Stelar Evolution in Pteridophytes.
CO5	➢ To understand the general character Manure and Manuring: Animal Wastes – Cattle Dung, Urine, Poultry Wastes, Slaughter Wastes, Piggery and Fishery Wastes.
CO6	➢ To explain the Green Manure: Plant wastes
CO7	➢ To explain the Biofertilizers
CO8	➢ Explain the Vermicomposting:

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	SMBO 31
Class	II year (2017 - 2018)
Semester	Odd, III Semester
Staff Name	1.Mrs. P. Kanimozhi Celina 2. Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the general character of Pteridophytes
- To discuss the classification of Pteridophytes
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea

- To Discuss the Stelar Evolution in Pteridophytes.
- To understand the general character of Gymnosperms
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
- To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
- Economic importance of Gymnosperms
- Explain the Geological Time Scale

MSU/2017-2018/B.Sc. Botany/Semester-III/Core Paper – 5

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY (4hrs/week)

UNIIT I **(12L)**

Pteridophytes: General Characteristics and Classification of Pteridophytes (Sporne 1966), Psilotum and Lycopodium: Distribution, Systematic Position, Structure, Reproduction and Life History (need not study the development of gametophyte, sex organs and sporophyte).

UNIT II **(11L)**

Adiantum, Marsilea: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle (need not study the development of gametophytes, sex organ and sporophyte), Stelar Evolution in Pteridophytes.

UNIT III **(13L)**

Gymnosperms: General Characteristics and Classification of Gymnosperms (David Bierhorst, 1971), Pinus: Distribution, Systematic Position, Structure, Reproduction and Life History

UNIT IV **(14L)**

Gnetum: Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of (need not study the Development of Sex Organs and Sporophyte). Economic Importance of Gymnosperms.

UNIT V **(10L)**

Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.

PRACTICALS:

23. To make suitable micro preparations of the following: Lycopodium Stem,
    Adiantum Stipe,
    Marsilea Petiole,
    Rhizome and Sporo carp.
    Pinus Stem and Needle,
    Gnetum Stem and Leaf.
24. To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.

    Paleobotany (Slide):
    Rhynia stem
    Lepidodendron stem
    Lyginopteris stem.

3. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I Pteridophytes: General Characteristics
2-L2	Classification of Pteridophytes (Sporne 1966)
3- L3	Distribution, Systematic Position of Lycopodium
4-L4	Structure of Lycopodium
5-L5	Reproduction and Life History of Lycopodium
6-L6	Unit II Occurrence of Adiantum
7-L7	Distribution, Systematic Position of Adiantum
8-L8	Structure of Adiantum

9-L9	Reproduction and Life History of Adiantum
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Occurrence of Marsilea
12-L11	Distribution, Systematic Position of Marsilea
13-L12	Structure of Marsilea
14-L13	Reproduction and Life History of Marsilea
15-L14	Unit III Gymnosperms: General Characteristics
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Classification of Gymnosperms
	Entering Internal Test-I Marks into University portal
20-L18	Distribution, Systematic Position of Pinus
21-P2	**College level meeting / Cell function**
22-L19	Structure of Pinus
23-L20	Reproduction of Pinus
24-L21	Reproduction of Pinus
25-L22	Life History of Pinus
26-L23	UNIT IV Gnetum: Occurrence
27-L24	Systematic Position of Gnetum
28-L25	Structure of Gnetum
29-L26	Reproduction of Gnetum
30-L27	Life Cycle of of Gnetum
31-L28	Economic Importance of Gymnosperms
32-L29	Revision of IV Unit
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	UNIT V Paleobotany: Geological Time Scale, Methods of Fossilization; Brief Study of Rhynia, Lepidodendron and Lyginopteris.
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Geological Time Scale
39-L34	Methods of Fossilization
40-L35	Methods of Fossilization
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Brief Study of Rhynia
44-L38	Brief Study of Rhynia
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Brief Study of Lepidodendron
47-L41	Brief Study of Lepidodendron
48-L42	**Allotting portion for Internal Test-III**
49-L43	Brief Study of Lyginopteris.
50-L44	Brief Study of Lyginopteris.
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**

54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	To understand the general character of Pteridophytes
CO2	To discuss the classification of Pteridophytes
CO3	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Adiantum, Marsilea
CO4	To Discuss the Stelar Evolution in Pteridophytes.
CO5	To understand the general character of Gymnosperms
CO6	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Pinus:
CO7	To explain the Occurrence, Systematic Position, Structure, Reproduction and Life Cycle of Gnetum
CO8	Economic importance of Gymnosperms
CO9	Explain the Geological Time Scale
Experimental Learning	
EL1	micro preparations of the following: Lycopodium Stem, Adiantum Stipe, Marsilea Petiole, Rhizome and Sporo carp. Pinus Stem and Needle,
EL2	To observe and identify Specimens and Microslides. Psilotum Habit, Stem T.S, Synangium L.S;Lycopodiumcone L.S, Adiantumhabit, Pinus -Male and Female Cone (Specimen),L.S of Male and Female Cone (Slide) Gnetum – Male and Female Cone (Specimen); L.S. of Male cone, Female Cone & Ovule.
EL3	Paleobotany (Slide): Rhynia stem Lepidodendron stem Lyginopteris stem.
Integrated Activity	
IA1	Prepare Permanent Slide for Pinus
IA2	Prepare Permanent Slide Marsilea

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature

Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Microbiology and Techniques In Biology
Course Code	SMBO41
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. V.K. Stanley Raja 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the concept of Microbiology
- To discuss the Five Kingdom Classification
- To explain the Gram Staining
- To describe the Virus and Bacteriophage
- To illustrate the Bacterio flora in Milk
- To describe the principles of Microscope.
- To describe the working nature of UV Spectrometer, MRI, ECG

MSU/2017-18/ B. Sc Botany/ Semester –IV /Core paper-6

MICROBIOLOGY AND TECHNIQUES IN BIOLOGY (4hrs/week)

UNIIT I (13L)

Microbiology: Brief History and Development, Classification of Microorganisms (Whittaker‟s Five Kingdom Concept), Bacteria - Outline of Classification (Bergey‟smanual), Ultra Structure, Nutritional Types and Reproduction of Bacteria, Media Preparation and Pure Culture techniques of Bacteria, Staining Technique - Gram Staining.

UNIT II (12L)

Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.

UNIT III (12L)

Microbes: Microbes in Food Production, Spoilage, Poisoning and Preservation. Bacteria Flora in Milk, Pasteurization of Milk and Milk Products, Bacterial Pathogens and Water Pollution, Drinking Water as a Vehicle of Diseases, Purification of water.

UNIT IV (11L)

Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.

UNIT V (12L)

Electrophoresis: Basic principles, electrophoretic mobility, factors, isoelectric focusing. Types- vertical and horizontal agarose and poly acrylamide gel electrophoresis, detection and recovery of electrophorogram. Gel documentation system. X-ray crystallography.

PRACTICALS

1. Preparation of Culture Media for Bacteria.

2. Preparation of Serial Dilution.

3. Isolation of Bacteria – Streak Plate Method

4. Identify the type of Bacteria using Gram Staining.

5. Analysis of Milk – Methylene Blue Dye Reduction Test.

6. Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	UNIT I, Microbiology: Brief History
2-L2	Development of Microbiology
3- L3	Classification of Microorganisms (Whittaker‟s Five Kingdom Concept)
4-L4	Bacteria - Outline of Classification
5-L5	Bacteria - Outline of Classification
6-L6	Ultra Structure of Bacteria
7-L7	Nutritional Types of Bacteria
8-L8	Reproduction of Bacteria
9-L9	Media Preparation and Pure Culture techniques of Bacteria,
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Staining Technique - Gram Staining.

12-L11	UNIT II Viruses: General Characteristics, Structure and Reproduction of HIV, T4 Bacteriophages, Viroids, Virions and Mycoplasma, Transmission of Viruses and Purification of Viruses.
13-L12	Structure of HIV
14-L13	Reproduction of HIV
15-L14	T4 Bacteriophages, Viroids, Virions and Mycoplasma
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis-**
19-L17	Transmission of Viruses and Purification of Viruses.
	Entering Internal Test-I Marks into University portal
20-L18	UNIT III
21-P2	**College level meeting / Cell function**
22-L19	Microbes: Microbes in Food Production
23-L20	Spoilage,
24-L21	Poisoning
25-L22	Preservation
26-L23	Bacteria Flora in Milk
27-L24	Pasteurization of Milk and Milk Products
28-L25	Bacterial Pathogens
29-L26	Water Pollution, Drinking Water as a Vehicle of Diseases
30-L27	Purification of water.
31-L28	UNIT IV, Instruments: Principles, Working Mechanism and Applications of UV Spectrometer, Centrifuge, ECG, MRI and Positron emission tomography.
32-L29	Instruments: Principles, Working Mechanism and Applications of UV Spectrometer
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Instruments: Principles, Working Mechanism and Applications of Centrifuge
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Instruments: Principles, Working Mechanism and Applications of ECG
39-L34	Instruments: Principles, Working Mechanism and Applications of MRI
40-L35	Instruments: Principles, Working Mechanism and Applications of Positron emission tomography.
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Electrophoresis: Basic principles,
44-L38	electrophoretic isoelectric focusing
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Types- vertical and horizontal agarose
47-L41	Acrylamide gel electrophoresis
48-L42	**Allotting portion for Internal Test-III**
49-L43	Detection and recovery of electrophorogram.
50-L44	X-ray crystallography.
51-IT-III	**Internal Test-III**

52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the concept of Microbiology
CO2	➢ To discuss the Five Kingdom Classification
CO3	➢ To explain the Gram Staining
CO4	➢ To describe the Virus and Bacteriophage
CO5	➢ To illustrate the Bacterio flora in Milk
CO6	➢ To describe the principles of Microscope.
CO7	➢ To describe the working nature of UV Spectrometer, MRI, ECG
Experimental Learning	
EL1	Preparation of Culture Media for Bacteria.
EL2	2. Preparation of Serial Dilution.
EL3	3. Isolation of Bacteria – Streak Plate Method
EL4	4. Identify the type of Bacteria using Gram Staining.
EL5	5. Analysis of Milk – Methylene Blue Dye Reduction Test.
	Spotters: Ultra Structure of Bacterial Cell, T4 Phage, HIV Virus,Autoclave, Laminar Air Flow Chamber,Hot Air Oven,Inoculation Needle, Agar slant, Spoiled Food,UV Spectrophotometer, Clinical Centrifuge, ECG, MRI, Positron emission tomography, Electrophoresis. 7. To maintain a Record Notebook.
Integrated Activity	
IA1	Prepare the gram Staining for the given Bacterial Culture
IA2	Isolation of Bacteria – Streak Plate Method

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B. Sc Botany
Course Name	Preservation of fruits and vegetables
Course Code	SSBO4A
Class	II year (2017 - 2018)
Semester	Even, IV Semester
Staff Name	1.Mr. S.Darwin 2. Dr. M. Amutha
Credits	4
L. Hours /P. Hours	4 / WK, 2/ WK
Total 60 Hrs/ Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10 Hrs /unit)	

Course Objectives

- To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
- To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
- To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
- To describe the Sauce, Pickles & Ketchup
- To illustrate the Canning of Fruits& Vegetables

MSU/2017-18/ B. Sc Botany / Semester –III Skill Based Subject -I (A)
PRESERVATION OF FRUITS AND VEGETABLES (4hrs/week)

Unit-I (11L)

Fruits and Vegetables: Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.

Unit-II (13L)

Principles of Preservation: Importance and Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.

Unit-III (13L)

Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.

Unit- IV (11 L)

Preparation of Chutney, Sauce, Pickles & Ketchup: Preparation of Chutney- Mango, Sauce – Tomato,Pickles- Lime, Mango and Garlic, KetchupTomato. Drying of fruits: Banana, Mango, Grapes and Fig.

Unit- V (12 L)

Canning of Fruits& Vegetables: Mango and Banana; Tomato, Carrot, Bean and Mushrooms.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16-6-2018
1-L1	Fruits and Vegetables: Nutritive values
2-L2	factors affecting storage of Fruits
3- L3	factors affecting storage of Vegetables
4-L4	Spoilage of fruits - microbial, enzymatic and insects.
5-L5	Spoilage of vegetables - microbial, enzymatic and insects.
6-L6	Unit II Principles of Preservation
7-L7	Importance of Preservation
8-L8	Methods of Preservation
9-L9	Refrigeration
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Freezing
12-L11	Canning,
13-L12	Drying
14-L13	Dehydration
15-L14	Chemical preservatives.
16-L15	**Allotting portion for Internal Test-I,** Explain the concept of Internal Test
17-IT-1	**Internal Test-I**
18-L16	**Test Paper distribution and result analysis**-
19-L17	UNIT III Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit , Jellies- Guava.
	Entering Internal Test-I Marks into University portal
20-L18	Methods of preparation of Fruit Juice- Orange,
21-P2	**College level meeting / Cell function**
22-L19	Squashes- grape
23-L20	Squashes- Pine apple
24-L21	Jam - Tomato
25-L22	Jam - Mixed Fruit
26-L23	Jellies- Guava
27-L24	UNIT Preparation of Chutney.
28-L25	Drying of fruits

29-L26	Sauce
30-L27	Pickles
31-L28	Ketchup
32-L29	Preparation of Chutney- Mango
33-L30	**Allotting portion for Internal Test-II**
34- P3	**Department Seminar**
35-L31	Pickles- Lime
36-L32	**Allotting portion for Assignment/seminar**
37-IT-II	**Internal Test-II**
38-L33	Pickles Mango
39-L34	Pickles Garlic
40-L35	Drying of fruits
41-L36	**Test Paper distribution and result analysis-**
	Entering Internal Test-II Marks into University portal
42-P4	**College level meeting/ function**
43-L37	Drying of fruits: Banana
44-L38	Drying of fruits: Mango
45-L39	**Submission of Assignment / taking the seminar**
46-L40	Drying of fruits: Grapes
47-L41	Drying of fig
48-L42	**Allotting portion for Internal Test-III**
49-L43	Clarifying the doubts in the Syllabus
50-L44	Clarifying the doubts in the Syllabus
51-IT-III	**Internal Test-III**
52-L45	**Test Paper distribution and result analysis**
53-L46	**Model Test Announcement**
54-L47	Clarifying the doubts in the Syllabus
55-L48	**Entering Internal Test-III Marks into University portal**
56-L49	**Model Test**
57-MT	**Practical Model Test**
58-MT	**Internal Practical Test**
59-MT	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31-10-2018

Course Outcomes

Learning Outcomes	**COs** of the course "Plant Anatomy and Micro Techniques"
CO1	➢ To understand the Nutritive values, factors affecting storage, spoilage - microbial, enzymatic and insects.
CO2	➢ To discuss the Methods of Preservation - Refrigeration, Freezing, Canning, Drying and Dehydration, Chemical preservatives.
CO3	➢ To explain the Preparation of Products: Methods of preparation of Fruit Juice- Orange, Squashes- grape and Pine apple; Jam - Tomato and Mixed Fruit ,

	Jellies- Guava.
CO4	➢ To describe the Sauce, Pickles & Ketchup
CO5	➢ To illustrate the Canning of Fruits& Vegetables

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students and explain the scientific concept of botany to the village people.

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Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Biotechnology and Genetic Engineering
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. D. Abiya Chelliah
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the principle of Tissue Culture Laboratory
- To know the Meristem Culture and Artificial Seed.
- Basic knowledge about Techniques of genetic engineering
- To know about Identification of Recombinants
- To explain the concept of DNA transfer techniques.

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 1A

BIOTECHNOLOGY AND GENETIC ENGINEERING (5hrs/week)

UNIT1 (15L)

Tissue Culture: Introduction, definition, history, scope and importance of plant tissue culture, Totipotency of cells, Tissue culture laboratory- organization and requirements, Sterilization techniques, Nutrient media- composition and preparation.

UNIT 11 (14L)

Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Protoplast isolation, fusion, selection of hybrids and regeneration.Cybrids– production and applications, Artificial seed: production, advantages and disadvantages.

UNIT 111 (16L)

Techniques of genetic engineering: Isolation of specific genes, enzymes used in gene cloning, Cloning Vectors - Plasmids,Cosmids and Phagemids,cDNALibraries,Agrobacterium mediated gene transfer in plants,GM plants – BtBrinjal, Bt Cotton, Golden rice. Bioethical issues.

UNIT 1V (16L)

Identification of Recombinants: Insertional inactivation, Immunochemical Method and Colony Hybridization Technique.Selection of Recombinant using Selective Medium and reporter genes, Blotting Techniques – Southern, Northern and Western Blotting.

UNIT V (14L)

Mutagenesis& DNA transfer techniques: Site directed mutagenesis and random mutagenesis; DNA transfer techniques: Physical method Microinjection, Chemical method-Calcium phosphate method, Electrical method Electroporation, Natural-Conjugation and bacterial transformation.

Spotters/Photographs

i. Callus culture from Carrot Explant.

ii. Protoplast Isolation. ‘iii. Plasmids – Ti plasmids iv. Gene cloning in E. Coli. v. Agrobacterium mediated gene transfer. vi. Blotting Techniques.

vii. Colony Hybridization technique. viii. Transgenic Plants prescribed in the syllabus. To maintain a record note book.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Tissue Culture: Introduction,
2-L2	Definition of Tissue Culture
3- L3	history, scope and importance of plant tissue culture
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Totipotency of cells
8- L1	Tissue culture laboratory- organization
9- L8	Tissue culture laboratory requirements
10- L9	Sterilization techniques
11-L10	.Protoplast Isolation
12-P11	Protoplast Isolation
13-P12	Protoplast Isolation
14-P13	Practical
15-L14	Types of tissue culture: Callus culture and apical meristem culture. Protoplast culture: Artificial seed: production, advantages and disadvantages.
16-L15	Protoplast isolation, fusion, selection of hybrids and regeneration.
17- L16	Cybrids– production and applications,
18-L17	Artificial seed: production
19- P18	Plasmids – Ti plasmids
20- P19	Plasmids – Ti plasmids
21-P20	Plasmids – Ti plasmids
	Internal Test I begins
22- L21	Artificial seed: production, advantages and disadvantages
23- IT-1	**Internal Test-I**
24- L22	Artificial seed: production, advantages and disadvantages
25- L23	Classification of amino acids.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Techniques of genetic engineering:
28- L26	enzymes used in gene cloning
29- P27	Gene cloning in E. Coli.
30- P2	Gene cloning in E. Coli.
31-P28	Gene cloning in E. Coli.
32-L29	Cloning Vectors - Plasmids

33-L30	Cosmids and Phagemids
34- L31	cDNALibraries
35- L32	Agrobacterium mediated gene transfer in plants
36- L33	GM plants – Bt Brinjal, Bt Cotton, Golden rice. Bioethical issues.
37- P34	Agrobacterium mediated gene transfer. vi. Blotting Techniques
38-P35	Agrobacterium mediated gene transfer. vi. Blotting Techniques
39- P36	Agrobacterium mediated gene transfer. vi. Blotting Techniques
40- L37	Golden rice.
41- L38	Golden rice.
42-P3	Bioethical issues.
43- L39	Bioethical issues.
44- P40	Identification of Recombinants: Insertional inactivation, Blotting Techniques – Southern, Northern and Western Blotting.
45- P41	Immunochemical Method and Colony Hybridization Technique
46- P42	Selection of Recombinant using Selective Medium and reporter genes
47- L43	Blotting Techniques – Southern
	Internal Test II begins
48- L44	Blotting Techniques –Northern and Western Blotting
49-IT-II	**Internal Test-II**
50-L45	Blotting Techniques Western Blotting
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Mutagenesis& DNA transfer techniques: Natural-Conjugation and bacterial transformation.
53- P48	Site directed mutagenesis and random mutagenesis;
54- P49	Site directed mutagenesis and random mutagenesis;
55- P50	DNA transfer techniques: Physical method Microinjection
56- L51	Practical
57- L52	Bioenergetics of Chloroplast
58- L53	Mitochondria,
59-P4	**College level meeting/ function**
60- L54	Chemical method-Calcium phosphate method
61- L55	Electrical method Electroporation,
62- L56	Natural-Conjugation and bacterial transformation
63- L57	Natural-Conjugation and bacterial transformation
64- L58	Natural-Conjugation and bacterial transformation
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper**

	discussion
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	➢ To know the principle of Tissue Culture Laboratory
CO2	➢ To know the Meristem Culture and Artificial Seed.
CO3	➢ Basic knowledge about Techniques of genetic engineering
CO4	➢ To know about Identification of Recombinants
CO5	➢ To explain the concept of DNA transfer techniques.
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

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St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Horticulture and plant Breeding
Course Code	**SMBO 53**
Class	III year (2017-2018)
Semester	Odd
Staff Name	Mr. V.K Stanley Raja
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs	

Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)

Course Objectives

- To know the Scope, importance and divisions of Horticulture
- To know the : Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components
- Basic knowledge Kitchen garden: Establishment, Organic manures and growth regulators in horticulture,
- To know about Plant Breeding Nature, Scope and Objectives
- To explain the concept of Mutation breeding: Procedure and practices, Mutagens

Syllabus

MSU/2017-2018/B.Sc. Botany/Semester-V/Elective Paper – 2A

HORTICULTURE & PLANT BREEDING (5hrs/week)

UNIT - I (14L)

Horticulture: Scope, importance and divisions, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.

UNIT - II (16L) Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets, water garden, terrarium, topiary and Bonsai.

UNIT - III (15L) Kitchen garden: Establishment, Organic manures and growth regulators in horticulture, Plant protection measures for horticulture, Seed Propagation methods, Preparation of Nursery beds, Transplantation – steps and Methods.

UNIT - IV (16L) Plant Breeding Nature, Scope and Objectives, Plant introduction, selection methods (pure line and mass), Hybridization techniques, Heterosis breeding, Interspecific and intergeneric hybridization.

UNIT – V (14L) Mutation breeding: Procedure and practices, Mutagens, Polyploidy breeding and its applications.Breeding for disease resistance.

PRACTICALS

Demonstration

i. Vegetative methods of propagation.

a. Cutting-Stem and Leaf cutting

b. Layering-Simple and air layering.

c. Grafting – Tongue grafting.

d. Budding – T-budding.

ii. Garden components -Rockery, hanging baskets, terrarium and topiary.

iii. Garden implements-spade, water can, pruning scissors, digging fork

iv. Designing Kitchen Garden.

v. Plant Breeding: Emasculation and Bagging methods

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin
1-L1	Horticulture: Scope, Vegetative propagation methods- cutting, layering, budding, grafting and vegetative propagules (bulb, sucker, corm).Advantages and disadvantages of vegetative propagation.
2-L2	Horticulture: importance
3- L3	Horticulture: divisions
4-P4	Practical . Callus culture from Carrot Explant.
5-P5	Practical – . Callus culture from Carrot Explant.
6-P6	Practical . Callus culture from Carrot Explant.
7-L7	Vegetative propagation methods- cutting,
8- L1	Vegetative propagation methods layering,
9- L8	Vegetative propagation methods- budding,
10- L9	Vegetative propagation methods- grafting
11-L10	. Vegetative propagation methods- vegetative propagules
12-P11	Unit 11 Gardening: Types of gardens – Formal, informal, Design and Establishment of Garden, Garden components, garden implements, lawn making, glass house, rockery, hanging baskets,
13-P12	Formal Gardening
14-P13	Informal Gardening
15-L14	Design and Establishment of Garden
16-L15	Garden components
17- L16	garden implements
18-L17	lawn making
19- P18	glass house
20- P19	rockery
21-P20	hanging baskets
	Internal Test I begins
22- L21	water garden, terrarium, topiary and Bonsai.
23- IT-1	**Internal Test-I**
24- L22	Kitchen garden: Establishment,
25- L23	Organic manures and growth regulators in horticulture
26- L24	**Test Paper distribution and result analysis**

	Entering Internal Test-I Marks into University portal
27- L25	Plant protection measures for horticulture,
28- L26	Seed Propagation methods
29- P27	Preparation of Nursery beds
30- P2	Transplantation – steps
31-P28	Methods of Transplantation
32-L29	Plant Breeding Nature,.
33-L30	Scope and Objectives,
34- L31	Plant introduction, selection methods (pure line and mass),
35- L32	Hybridization techniques, Heterosis breeding
36- L33	, Interspecific
37- P34	Intergeneric hybridization
38-P35	Mutation breeding:
39- P36	Procedure and practices of
40- L37	Mutagens, Polyploidy breeding
41- L38	and its applications.Breeding for disease resistance.
42-P3	a. Cutting-Stem and Leaf cutting
43- L39	b. Layering-Simple and air layering.
44- P40	c. Grafting – Tongue grafting.
45- P41	d. Budding – T-budding.
46- P42	Garden components -Rockery,
47- L43	Garden components - hanging baskets
	Internal Test II begins
48- L44	terrarium and topiary.
49-IT-II	**Internal Test-II**
50-L45	Garden implements-spade,
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	ii. hanging baskets,
53- P48	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
54- P49	. Garden implements-spade, water can, pruning scissors, digging fork iv. Designing Kitchen Garden.
55- P50	Plant Breeding: Emasculation and Bagging methods
56- L51	Plant Breeding: Emasculation and Bagging methods
57- L52	
58- L53	
59-P4	**College level meeting/ function**
60- L54	Garden components
61- L55	iii. Garden implements
62- L56	
63- L57	
64- L58	
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical
68- L61	Practical

69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course
CO1	To know the Scope, importance and divisions of Horticulture
CO2	To know the : Types of gardens – Formal
CO3	Basic knowledge Kitchen garden: Establishment
CO4	To know about Plant Breeding Nature
CO5	To explain the concept of Mutation breeding: Procedure and practices
Experimental Learning	
EL1	To Know Callus Culture
EL2	To explain Meristem Culture
EL3	To explain DNA transfer techniques.
EL4	Identification of Recombinants
Integrated Activity	
IA1	To visit Tissue culture labs
IA2	To Isolate the Protoplast

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

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Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Morphology and Taxonomy of Angiosperms
Course Code	JMPB51
Class	III year (2018-2019)
Semester	Odd
Staff Name	Dr. M. Amutha
Credits	5
L. Hours /P. Hours	5 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the morphology of the plant parts.
- To know the structure of various types of inflorescences, floral parts, and fruits.
- Basic knowledge about taxonomy and classification of angiosperm plants.
- To study about binomial nomenclature.
- To know about angiosperm families.
- To study the preparation of dichotomous key.
- To know about the useful plant parts and their uses.

Syllabus

UNIT 1 Morphology_ Modification of Root, Stem and Leaf. Leaf - Simple, Compound; Phyllotaxy; Inflorescence – Types; Flower- Floral parts; Fruits- Types.

UNIT 11 Principles of taxonomic Hierarchy (Order, Family, Genus and Species Level). Systems of classification (with merits and demerits) – Natural – Benthem aqnd Hooker system, Phylogenetic – Engler and Prantl System; Binomial nomenclature – ICBN, Dichotomous key, Preparation, Maintenance and significance of Herbarium.

UNIT 111 Critical study of the following Families and their Economic importance: Annonaceae, Sterculiaceae, Rutaceae, Caesalpiniaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Sapotaceae.

UNIT IV Convolvulaceae, Asclepiadaceae, Apocynaceae, Lamiaceae, Euphorbiaceae, Amaranthaceae, Liliaceae, Cannaceae and Poaceae.

UNIT V Binomial, Family, Useful part and Uses of the Following Plant Products: Fibres- Jute, Cotton and Hemp; Timber- Teak, Rosewood and Neem; Resin – Camphor and Canada balsam; Cosmeticsb- *Aloe*, Sandal wood Turmeric; Beverages – Tea, Coffee and *Cocoa*; Oil – Coconut oil, Eucalyptus oil and *Pongamia* oil; Fruits and Vegetables- Banana, Jackfruit, Pineapple; Medicinal plants – *Adatoda*, Clove and *Acorus calamus*

PRACTICALS:

1. Morphological identification of plant parts and their modifications.

2. Technical description of plant parts and dissection of floral parts of plants with reference to the families prescribed in the syllabus.

3. Field trips (minimum 2 days) to places under the guidance of teachers to study plants in their natural habitat and submit a report.

4. Preparation of dichotomous key.

5. Identify and comment on the useful plant parts or plants prescribed in the syllabus.

6. Preparation and submission of 10 herbarium sheets.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of morphology
2-L2	Brief account on root modification,
3- L3	Stem and Leaf modification.
4-P4	Practical
5-P5	Practical – Morphology modifications.
6-P6	Practical
7-L7	Brief account about phyllotaxy.
8- L1	Inflorescence.
9- L8	Fruits – Types.
10- L9	Taxanomical Hierarchy.
11-L10	Brief study about Natural classification.
12-P11	Practical

13-P12	Practical – Dissectout Annonaceae, Sterculiaceae.
14-P13	Practical
15-L14	Phylogenetic system of Classification.
16-L15	ICBN
17- L16	Dichotomous key preparation.
18-L17	Preparation steps of Herbarium
19- P18	Practical
20- P19	Practical – Dissectout Rutaceae and Caesalpiniaceae.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Annonaceae
25- L23	Sterculiaceae
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Cucurbitaceae
28- L26	Apiaceae
29- P27	Practical
30- P2	Practical – C Apiaceae, Covolvulaceae
31-P28	Practical
32-L29	Caesalpiniaceae
33-L30	Sapotaceae
34- L31	Rubiaceae
35- L32	Convolvulaceae
36- L33	Asclepiadaceae
37- P34	Practical
38-P35	Practical – Rubiaceae, Sapotaceae , Apocynaceae
39- P36	Practical
40- L37	Lamiaceae
41- L38	Euphorbiaceae
42-P3	Amaranthaceae
43- L39	Cannaceae
44- P40	Practical
45- P41	Practical – Euphorbiaceae, Asclepiadaceae
46- P42	Practical
47- L43	Liliaceae
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Uses of Fibres.
53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Lamiaceae, Cannaceae, Poaceae
56- L51	Practical

57- L52	Timber
58- L53	Resin
59-P4	**College level meeting/ function**
60- L54	Cosmatics
61- L55	Beverages
62- L56	Oil
63- L57	Fruits and vegetables
64- L58	Medicinal plants
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Amaranthaceae, Cannaceae, Liliaceae
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about angiospermic plants.
CO2	Know about angiospermic plants
CO3	Know about the different dicot and monocot plants.
CO4	To learn about different floral parts.
CO5	To know about different economic importance of plants.
CO6	To know about uses of various oils, timbers, bevarages etc.
CO7	To know about uses of medicinal plants.
CO8	To know about classification of plants.
CO9	To know about herbarium preparation.
Experimental Learning	
EL1	Know about dichotomous key preparation.
EL2	Know about how to idendify the dicot and monocot plants.
EL3	Know about taxonomical hierarchy.
EL4	Know about differentiation of floral parts.
Integrated Activity	
IA1	To visit different fields to study the plants in their natural habitat.
IA2	To attended two days study tour about Taaxonomy.

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc. Botany
Course Name	Plant Physiology
Course Code	GMPB61
Class	III year (2017-2018)
Semester	Odd
Staff Name	Dr. Mr. D. Abiya Chelliah
Credits	6
L. Hours /P. Hours	6 / WK
Total 75 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 65 Hrs (5 units; 5×13=65; 13Hrs /unit)	

Course Objectives

- To know the physiology of the plans.

- To know the structure of various types of stomata, chloroplast, and phytohormons .
- Basic knowledge about physiology and classification of macro nutrients and micronutrients.
- To study about C3, C4 and CAM pathways.
- To know about translocation of organic solutes.
- To study the transpiration pull and cohesion theory.
- To know about various phytohormones and their uses.

Syllabus

UNIT I

WaterRelationsof Plants&Transpiration: Water Relations: Imbibition, Diffusion and Osmosis; Water Potential- Definition, Components, Absorption of Water – Mechanism and Factors affecting Water Absorption; TranspirationDefinition, Types, Significance and Mechanism of Stomatal Transpiration- steps and theories, Guttation

UNIT II

Ascent of Sap&Mineral nutrition: Ascent of Sap –Definition, Path of Ascent of Sap, Mechanism- Transpiration Pull and Cohesion Theory.Mineral nutrition - Macro and Micro Nutrients-Absorption of Mineral Salts – Mechanism, Translocation of Organic Solutes - Mechanism of Phloem Transport (Munch‟s Mass flow hypothesis).

UNIT III

Photosynthesis&.Respiration: Photosynthesis:Light and Dark Reactions - Photosynthetic Electron Transport Chain and Photophosphorylation (Cylic and Non cyclic); Carbon Assimilation - C3, C4 and CAM Pathways andits Significance;Respiration: Glycolysis, TCA cycle and Oxidative Phosphorylation.

UNIT IV

Growth and Development: Growth Curve and phases of growth;Phytohormones:Physiological Effect and Practical Applications - Auxin, Gibberellic acid, Cytokinin, Ethylene and Abscisicacid;Photoperiodism and Vernalization.

UNIT V

Seed Dormancy: Causes and Methods ofBreaking Dormancy; Stress Physiology - Classification– Bioticand Abiotic, Stress Factors- Response of Plants to Salt, Drought, Frost and Heat

PRACTICALS

1. Water Potential by Gravimetric Method.

2. Water Potential by Falling Drop Method.

3. Osmotic Potential by Plasmolytic Method.

4. Rate of Photosynthesis in Different Concentrations of Bi-Carbonate – Bubble Method.

5. Measurement of Stomatal Index.

6. Effect of Temperature on Permeability of Plasma Membrane.

7. Separation of Chlorophyll Pigments by Ascending Paper Chromatography.

DEMONSTRATION: 1. Tissue Tension

2. Suction due to Transpiration

3. Ganong‟ sPhotometer

4. Fermentation

5. Arc Auxanometer

6. Clinostat

7. Phototropism

Spotters

1. Absorption Spectrum of Chlorophylls

2. Growth curve. To maintain a record note book.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2018
1-L1	Brief account of Imbibition
2-L2	Brief account on Diffusion,
3- L3	Osmosis , Water Potential and Water Absorption.
4-P4	Practical
5-P5	Practical – Water Potential by Gravimetric method
6-P6	Practical
7-L7	Brief account on Transpiration
8- L1	Mchanism of Stomatal Traspiration
9- L8	Significance of Transpiration.

10- L9	Ascent of sap
11-L10	Brief study about Path of Ascent of sap.
12-P11	Practical
13-P12	Practical – Water Potential by Falling Drop Method.
14-P13	Practical
15-L14	Study about Transpiration Pull Cohesion Thory.
16-L15	Mineral Nutrition
17- L16	Various types of Macronutrients.
18-L17	Different types of micronutruients.
19- P18	Practical
20- P19	Practical – Osmotic Potential by Plasmolytic Method.
21-P20	Practical
	Internal Test I begins
22- L21	Revision.
23- IT-1	**Internal Test-I**
24- L22	Absorption of Mineral Salts.
25- L23	Study about Translocaton of Organic solutes.
26- L24	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
27- L25	Mechanism of Phloem Transport.
28- L26	Study about Light and Dark Reactions.
29- P27	Practical
30- P2	Practical – Quantitative Estimation of Total Chloophyll Content in Leaves.
31-P28	Practical
32-L29	Study about Electron Transport Chain.
33-L30	Photophosphorylation
34- L31	C3 Cycle
35- L32	C4 Cycle
36- L33	CAM Pathway.
37- P34	Practical
38-P35	Practical – Quantitative Estimation of Carotenoid Content in Flowers.
39- P36	Practical
40- L37	Photorespiration.
41- L38	Glycolysis
42-P3	TCA Cycle
43- L39	Study about Oxidative Phosphorylation
44- P40	Practical
45- P41	Practical – Rate of Photosynthesis in Different Concentrations of Bi-Carbonate-Bubble Method.
46- P42	Practical
47- L43	Study about Growth and Growth Curve
	Internal Test II begins
48- L44	Revision
49-IT-II	**Internal Test-II**
50-L45	Poaceae
51- L46	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
52- L47	Different Phases of Growth Curve.

53- P48	Practical Revision.
54- P49	Practical
55- P50	Practical – Measurement of Stomatal Index.
56- L51	Practical
57- L52	Growth Hormones.
58- L53	Auxin and Gibberellic Acid
59-P4	**College level meeting/ function**
60- L54	Cytokinin, Ethylene and Absisic acid
61- L55	Various methods of Seed Dormancy and Breaking of Seed Dormancy.
62- L56	Stress Physiology
63- L57	Biotic and Abiotic Factors of Stress
64- L58	Differentiate Photoperiodism and Vernalization.
	Internal Test III begins
65- L59	**Internal Test-III**
66- L60	Practical
67-IT-III	Practical – Effect of Temperature on Permeability of Plasma Membrane.
68- L61	Practical
69- L62	Practical revision.
70- L63	Practical revision **Test Paper distribution and result analysis**
	Practical revision. **Entering Internal Test-III Marks into University portal**
71-MT	**Model Test**
72-MT	**Model Test**
73-MT	**Model Test**
74-L64	**Model test paper distribution and previous year university question paper discussion**
75-L65	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.11.2018

Course Outcomes

Learning Outcomes	**COs** of the cour<Morphology and Taxonomy of Angiosperms >"
CO1	To learn about Physiology of plants.
CO2	Know about absorption mechanism of plants.
CO3	Know about the different mechanism of Stomatal Transpiration in Plants.
CO4	To learn about differen kind of Photophosphorylations.
CO5	To know about Oxidative Phosphorylation..
CO6	To know about uses of Auxin, Gibbrellic Acid, Cytokinin etc.
CO7	To know about Photoperiodism and Vernalisation.
CO8	To know about Seed Dormancy.
CO9	To know about Stress Physiology.
Experimental Learning	
EL1	Know about Stomatal Index.
EL2	Know about how to Measure the Photosynthetic Rate.
EL3	Know about Stomatal Index.
EL4	Study about Water Potential.

Integrated Activity	
IA1	Study about Osmosis.
IA2	To study Tissue Tension.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.Sc Botany
Course Name	Environmental Studies
Course Code	**SEVS11**
Class	I-year (2017-2018)
Semester	Odd
Staff Name	Mr.S.Darwin Paul Edison, Mr.V.K. Stanley Raja
Credits	2
L. Hours /P. Hours	2 / WK
Total 30Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 20 Hrs (5 units; 5×4=20; 4Hrs /unit)	

Course Objectives

- To understand the natural resources.
- To learn about Eco system
- To understand the Biodiversity and Its Conservation
- To identify the Environmental Pollution
- To learn Social issues and the Environment

Syllabus

ENVIRONMENTAL STUDIES

Unit I

Definition, scope and importance Natural resources and associated problems:

a) Forest resources: Use and over-exploitation, deforestation, timber extraction, dams and their effects on forests and tribal people.

b) Water resources: Use and over-utilization of surface and ground water, floods, drought, dams-benefits and problems, water conservation and watershed management.

c) Mineral resources: Use and exploitation, environmental effects.

d) Food resources: World food problems, changes, effects of modern agriculture, fertilizer-pesticide problems.

e) Energy resources: Growing energy needs, renewable and non renewable energy sources, alternate energy sources.

f) Land resources: Land as a resource, land degradation, man-induced landslides, soil erosion and desertification.

UNIT II: ECOSYSTEMS

a) Forest Ecosystem b) Grassland Ecosystem c) Desert ecosystem d) Aquatic Ecosystem (Ponds, rivers, oceans, estuaries) Energy flow in the ecosystem Ecological succession Food Chains, Food Webs and Ecological Pyramids.

UNIT III: BIODIVERSITY AND ITS CONSERVATION

Introduction Definition: Genetic, species and ecosystem diversity. Bio geographical classification of India Values of Biodiversity Bio diversity at global, national and local levels India as a mega-diversity nation Hot-Spots of biodiversity Threats to biodiversity Endangered and endemic species of India Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT IV: ENVIRONMENTAL POLLUTION

Definition- Causes, effects and control measures of:- a) Air Pollution b) Water Pollution c) Soil Pollution d) Marine Pollution e) Noise Pollution. f) Thermal Pollution Solid Waste Management Disaster Management: Floods, earthquake, cyclone and landslides.

UNIT V: SOCIAL ISSUES AND THE ENVIRONMENT

Climatic change, global warming, acid rain, ozone depletion. Wasteland reclamation Consumerism and Waste products, use and through plastics Environment Protection Act Air (Prevention and Control of Pollution) Act Water (Prevention and Control of Pollution) Act Wildlife Protection Act Forest Conservation Act Population Explosion - Family Welfare Programme Human Rights.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 16.06.2017
1-L1	Definition, scope and importance of Natural resources
2-L2	Water resources and food resources
3- P1	**Welcoming of First year and Inauguration of Botany Association**
4-L3	Mineral resources, Food resources, Energy resources and Land resources
5-L4	**Allotting portion for Internal Test-I**
	Internal Test I begins
6-IT-I	**Internal Test-I**
7-L5	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
8-L6	Forest Ecosystem and Grassland Ecosystem
9-L7	Desert ecosystem and Aquatic Ecosystem
10-P2	**College level meeting/Cell function**
11-L8	Biodiversity and its Conservation
12-L9	Definition: Genetic, species and ecosystem diversity.

13-P3	Biogeographical classification of India Values of Biodiversity
14-L10	Environmental Pollution Definition- Causes, effects and control measures
15-L11	Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution and Thermal Pollution
16-L12	**Allotting portion for Internal Test-II**
	Internal Test II begins
17-IT-1	**Internal Test-II**
18-L13	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
19-L14	Global warming
20- P2	**College level meeting/ function**
21-L15	Environment Protection Act Air (Prevention and Control of Pollution) Act Water (Prevention and Control of Pollution) Act
22-L16	Wildlife Protection Act Forest Conservation Act
23- L17	**Allotting portion for Internal Test-III**
	Internal Test III begins
24- IT-III	**Internal Test-III**
25-L18	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
26-MT	**Model Test**
27-MT	**Model Test**
28-MT	**Model Test**
29-L19	**Model test paper distribution and previous year university question paper discussion**
30-L20	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**COs** of the course "<History of India up to 647 A.D >"
CO1	Learned about natural resources of India
CO2	Identify the important resources
CO3	Study about the importance of Eco system in India
CO4	Discuss the Biodiversity and its Conservation
CO5	Learned Biogeographical classification of India and Values of Biodiversity
CO6	Know about the causes for the Environmental Pollution
CO7	Study about how to control the various pollution
CO8	Learned about Global warming
CO9	Study about the important environmental related Acts

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	B.A. Botany
Course Name	Value Based Education
Course Code	**SVBE21**
Class	I-year (2017-2018)
Semester	Even
Staff Name	Mr. S.Darwin Paul Edison, Mr. V.K Stanley Raja
Credits	2
L. Hours /P. Hours	2 / WK
Total 30Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 20 Hrs (5 units; 5×4=20; 4Hrs /unit)	

Course Objectives

- To enable the students to understand the social realities and to inculcate an essential value system towards building a health society.
- To learn about Social Justice
- To understand the Human Rights and Marginalized People
- To identify the Social Issues and Communal Harmony
- To learn Values and Ethics

Syllabus

VALUE BASED EDUCATION

Unit I:

Social Justice - Definition – need – parameters of social justice – factors responsible for social injustice – caste and gender – contributions of social reformers.

Unit II :

Human Rights and Marginalized People Concept of Human Rights – Principles of human rights – human rights and Indian constitution – Rights of Women and children – violence against women – Rights of marginalized People – like women, children, dalits, minorities, physically challenged etc

Unit III:

Social Issues and Communal Harmony Social issues – causes and magnitude - alcoholism, drug addiction, poverty, unemployment etc – communal harmany –concept –religion and its place in public in public domain – separation of religion from politics –secularism role of civil society

Unit IV:

Media Education and Globalized World Scenario Mass media –functions –characteristics – need and purpose of media literacy – effects and influence - - youth and children – media power – socio cultural and political consequences mass mediated culture - - consumeristic culture – Globalization – new media- prospects and challenges

Unit V:

Values and Ethics Personal values – family values – social values – cultural values – Professional values – and overall ethics – duties and responsibilities

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 16.06.2017
1-L1	Social Justice – Definition, parameters of social justice
2-L2	Factors responsible for social injustice – caste and gender – contributions of social reformers
3- P1	**Inauguration of History Association**
4-L3	Human Rights and Marginalized People Concept of Human Rights
5-L4	**Allotting portion for Internal Test-I**
	Internal Test I begins
6-IT-I	**Internal Test-I**
7-L5	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
8-L6	Rights of Women and children – violence against women
9-L7	Social Issues and Communal Harmony Social issues
10-P2	**College level meeting/Cell function**
11-L8	Separation of religion from politics Secularism role of civil society
12-L9	Media Education and Globalized World Scenario
13-P3	Socio cultural and political consequences mass mediated culture
14-L10	Globalization
15-L11	Values and Ethics
16-L12	**Allotting portion for Internal Test-II**
	Internal Test II begins
17-IT-1	**Internal Test-II**
18-L13	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
19-L14	Personal values – family values – social values
20- P2	**College level meeting/ function**

21-L15	Cultural values – Professional values – and overall ethics
22-L16	Duties and responsibilities
23- L17	**Allotting portion for Internal Test-III**
	Internal Test III begins
24- IT-III	**Internal Test-III**
25-L18	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
26-MT	**Model Test**
27-MT	**Model Test**
28-MT	**Model Test**
29-L19	**Model test paper distribution and previous year university question paper discussion**
30-L20	**Feedback of the Course, analysis and report preparation**
	Last Working day on 06.11.2017

Course Outcomes

Learning Outcomes	**CO's** of the course "<Value Based Education >"
CO1	Learned about Social Justice
CO2	Identify the parameters of social justice
CO3	Study about the importance of human rights
CO4	Discuss the Women and children Rights
CO5	Know about the Social Issues and Communal Harmony
CO6	Study about the causes for the alcoholism, drug addiction, poverty, unemployment etc
CO7	Study about the importance of Media Education
CO8	Learned about Globalization
CO9	Study about the important Values and Ethics

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN (2016-2017)

(Prepared by staff member handling the course)

Programme Name	B.Sc Botany
Course Name	Personality Development
Course Code	**JCSB5A**
Class	III-year (2014-2015)
Semester	Odd
Staff Name	Mr. S. Darwin Paul Edison
Credits	4
L. Hours /P. Hours	4 / WK
Total 60Hrs/Semester Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 50 Hrs (5 units; 5×10=50; 10Hrs /unit)	

Course Objectives

- To know about the importance of Personality Development.
- To learn how to Developing Self – Awareness
- To understand the Leadership quality
- To utilize the different types of skills
- To learn Significance of managing Emotional intelligence

Syllabus

PERSONALITY DEVELOPMENT

UNIT -I

PERSONALITY - Definition – Determinants – Personality Traits –Theories of Personality – Importance of Personality Development. SELF AWARENESS – Meaning – Benefits of Self – Awareness – Developing Self – Awareness. SWOT – Meaning – Importance- Application – Components. GOAL SETTING Meaning- Importance – Effective goal setting – Principles of goal setting – Goal setting at the Right level.

UNIT – II

SELF MONITORING – Meaning – High self – monitor versus low self monitor – Advantages and Disadvantages self monitor- Self –monitoring and job performance. PERCEPTION- Definition- Factor influencing perception- Perception process –Errors in perception – Avoiding perceptual errors. ATTITUDE – Meaning- Formation of attitude – Types of attitude - Measurement of Attitudes – Barriers to attitude change – Methods to attitude change. ASSERTIVENESS - Meaning –

Assertiveness in Communication – Assertiveness Techniques – Benefits of being Assertive – Improving Assertiveness.

UNIT – III

TEAM BUILDING – Meaning – Types of teams – Importance of Team building- Creating Effective Team. LEADERSHIP – Definition – Leadership style- Theories of leadership – Qualities of an Effect leader. NEGOTIATION SKILLS – Meaning – Principles of Negotiation – Types of Negotiation – The Negotiation Process – Common mistakes in Negotiation process. CONFLICT MANAGEMENT – Definition- Types of Conflict- Levels of Conflict – Conflict Resolution – Conflict management .

UNIT –IV

COMMUNICATION – Definition – Importance of communication – Process of communication - Communication Symbols – Communication network – Barriers in communication – Overcoming Communication Barriers. TRANSACTIONAL ANALYSIS – Meaning – EGO States – Types of Transactions – Johari Window- Life Positions. EMOTIONAL INTELLIGENCE- Meaning – Components of Emotional Intelligence- Significance of managing Emotional intelligence – How to develop Emotional Quotient. STRESS MANAGEMENT – Meaning – Sources of Stress – Symptoms of Stress – Consequences of Stress – Managing Stress

UNIT – V

SOCIAL GRACES – Meaning – Social Grace at Work – Acquiring Social Graces. TABLE MANNERS – Meaning – Table Etiquettes in Multicultural Environment- Do's and Don'ts of Table Etiquettes. DRESS CODE – Meaning- Dress Code for selected Occasions – Dress Code for an Interview. GROUP DISCUSSION – Meaning – Personality traits required for Group Discussion- Process of Group Discussion- Group Discusson Topics. INTERVIEW – Definition- Types of skills – Employer Expectations –Planning for the Interview – Interview Questions- Critical Interview Questions.

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on
1-L1	Personality - Definition – Determinants – Traits –Theories of Personality
2-L2	Importance of Personality Development. Self Awareness – Meaning – Benefits of Self – Awareness
3- L3	Developing Self – Awareness.
4-L4	SWOT – Meaning – Importance- Application – Components.
5-L5	Goal Setting Meaning- Importance –
6-L6	Effective goal setting – Principles of goal setting –
7-L7	Goal setting at the Right level.
8- P1	**Inauguration of History Association**
9- L8	Self Monitoring – Meaning – High self – monitor versus low self monitor
10- L9	Advantages and Disadvantages self monitor- Self –monitoring and job performance.
11-L10	Perception- Definition- Factor influencing perception-
12-L11	Perception process –Errors in perception – Avoiding perceptual errors.
13-L12	Attitude – Meaning- Formation of attitude – Types of attitude - Measurement of Attitudes – Barriers to attitude change – Methods to attitude change.
14-L13	Assertiveness - Meaning – Assertiveness in Communication – Assertiveness

	Techniques – Benefits of being Assertive – Improving Assertiveness
15-L14	**Allotting portion for Internal Test-I**
	Internal Test I begins on
16-L15	Team Building – Meaning – Types of teams – Importance of Team building- Creating Effective Team.
17-IT-1	**Internal Test-I**
18-L16	Leadership – Definition – Leadership style- Theories of leadership – Qualities of an Effect leader.
19-L17	**Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
20-L18	Negotiation Skills – Meaning – Principles of Negotiation – Types of Negotiation – The Negotiation Process – Common mistakes in Negotiation process.
21- L19	Conflict Management – Definition- Types of Conflict- Levels of Conflict – Conflict Resolution – Conflict management
22- P2	**College level meeting/Cell function**
23-L20	Communication – Definition – Importance of communication – Process of communication - Communication Symbols
24-L21	Transactional Analysis – Meaning – EGO States – Types of Transactions – Johari Window- Life Positions.
25-L22	Emotional Intelligence- Meaning – Components of Emotional Intelligence-
26-L23	Significance of managing Emotional intelligence – How to develop Emotional Quotient.
27-L24	Stress Management – Meaning – Sources of Stress –
28-L25	Symptoms of Stress – Consequences of Stress – Managing Stress
29-L26	Social Graces – Meaning – Social Grace at Work –
30-L27	Table Manners – Meaning – Table Etiquettes in Multicultural Environment-
31-L28	Do's and Don'ts of Table Etiquettes.
32-L29	Dress Code – Meaning- Dress Code for selected Occasions
33-L30	Dress Code for an Interview.
34- P3	**Department Seminar**
35-L31	Group Discussion – Meaning – Personality traits required for Group Discussion-
36-L32	**Allotting portion for Internal Test-II**
	Internal Test II begins on
37- L33	Process of Group Discussion-
38- IT-II	**Internal Test-II**
39-L34	Group Discusson Topics.
40-L35	**Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
41-L36	Interview – Definition-
42- L37	Types of skills –
43- L38	Employer Expectations –
44- P4	**College level meeting/ function**
45-L39	Planning for the Interview –
46-L40	Interview Questions-
47-L41	Critical Interview Questions.
48-L42	Acquiring Social Graces.
49-L43	Communication network –
50-L44	**Allotting portion for Internal Test-III**

	Internal Test III begins on
51 L45	Barriers in communication –
52- L46	Overcoming Communication Barriers.
53-IT-III	**Internal Test-III**
54-L47	Revision
55-L48	**Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
56- MT	**Model Test begins on**
57-MT	**Model Test**
58-MT	**Model Test**
59- L49	**Model test paper distribution and previous year university question paper discussion**
60-L50	**Feedback of the Course, analysis and report preparation**
	Last Working day on

Course Outcomes

Learning Outcomes	**COs** of the course "<Personality Development >"
CO1	After learning this course, students will able to explain the importance of Personality Development
CO2	Study about the Developing Self – Awareness
CO3	Understand the Leadership quality
CO4	Utilized the different types of skills
CO5	Learned about the Significance of managing Emotional intelligence
CO6	Discuss the SWOT Analyses
CO7	Learned improve the Personality Quality
CO8	Study about the Interview dress code
CO9	Understand the Self confidence

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study. To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Algae, Fungi, Lichens & Bryophytes
Course Code	HBOM11
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the classification and distribution of algae.
- To know about the structure and reproduction and life cycle of patherns of algae.
- To know abort origin and evolution of algae.
- To know about the economic impact of algae.
- To know the basic knowledge about general characteristic features of fungi.
- To know about the classification of fungi.
- To know about the economic importance of fungi.
- To impart knowledge on 4chens of their ecological significance.
- To know about the general characters of Bryophytes.
- To impart knowledge on the life cycle pattern of different classes of Bryophytes

Syllabus

Algae, Fungi, Lichens And Bryophytes

UNIT – I

General characters of algae including similarities and diversities. Classification of algae proposed by F.G. Fritsch, V.J. Chapman and Parker – Basis of algal classification.

Distribution – range of thallus structure – Reproduction and life cycle patterns of algae – Cyanophyceae, Chlorophyceae, Xanthophyceae, Chrysophyceae, Bacillariophyceae, Cryptophyceae, Dinophyceae, Euglenophyceae, Phaeophyceae and Rhodophyceae.

UNIT –II

Physiology and Ecology of algae. Origin and evolution of sex in algae. Fossil algae – economic importance of algae – laboratory culture and commercial cultivation of algae. Algae as indicators of water pollution.

UNIT III

General charcters of fungi. Classification of fungi proposed by Alexopoulous and Mims. Homothallism and Heterothallism in fungi – Parasexuality in fungi – Origin of fungi – Mycorrihiza. Economic importance of fungi. An over view of Zygomycetes, Basidiomycetes and Deuteromycetes including life history.

UNIT IV

A general account of lichens – classification – structure – nutrition and reproduction of lichens – Microchemical tests for lichens – Synthesis of lichens. Economic importance of lichens – Ecological significance of lichens.

UNIT V

General characters of Bryophytes including similarities and diversities. Classification of Bryophytes proposed by G.M. Smith and Rothmaller. Reproduction in Bryophytes. General life cycle pattern and alternation of generation in bryophytes. An Over view of Hepaticopsida, Anthoceropsida and Bryopsida including life history – Origin of bryophytes. Evolution of gametophytes and sporophytes in bryophytes – Economic importance of bryophytes.

PRACTICALS

ALGAE

Anabaena, Oscillatoria, Oedogonium, Enteromorpha, Padina, Turbinaria, Gracilaria.

FUNGI

Penicillium, Mucor, Xylaria, Polyporus, Agaricus

LICHENS

Any one foliose lichen, Usnea

BRYOPHYTES

Plagiochasma, Anthoceros, Polytrichum

RECORD

Algal collection trip and submission of 5 Herbaria

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2014
1-L1	General Characters of algae
2-L2	Similarities and Diversities of Algae
3- L3	Classification of Algae (F.G. Fritsch, V.J. Chapman, Parker)
4-L4	Classification of Algae
5-L5	Range of Thallus Structure
6-L6	Reproduction & Life Patterns of Algae
7-L7	Reproduction & Life Patterns of Algae
8-L8	life-history of Cyanophyceae
9-L9	life-history of Cyanophyceae
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Chlorophyceae
12-L11	Chlorophyceae
13-L12	Xanthophyceae
14-L13	Xanthophyceae
15-L14	Chrysophyceae
16-L15	Chrysophyceae
17-L16	Bacillariophyceae
18-L17	Bacillariophyceae
19-L18	Cryptophyceae
20-L19	Cryptophyceae
21-L20	Dinophyceae
22-L21	Dinophyceae
23-L22	Euglenophyceae - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Euglenophyceae
25-L24	Phaeophyceae
26-IT-1	**Internal Test-I**
27-L25	Phaeophyceae
28-L26	Rhodophyceae
29-L27	Rhodophyceae
30-L28	Physiology and Ecology of Algae - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal

31- L29	Origin & Evolution of Sex in Algae
32- L30	Fossil Algae
33- L31	Fossil Algae
34-P2	**College level meeting/Cell function**
35- L32	Economic Importance of Algae
36- L33	Laboratory culture and commercial cultivation of algae
37- L34	Algae as indicators of water pollution
38- L35	General characters of algae
39- L36	Classification of Fungi (Alexopoulous and Mims)
40- L37	Homothallism & Heterothallism in Fungi
41- L38	Parasexuality of Fungi
42- L39	Origin of Fungi, Mycorrihza
43- L40	Economic Importance of Fungi
44- L41	Over View of Zygomycetes
45- L42	Zygomycetes
46- L43	Ascomycetes
47- L44	Ascomycetes
48- L45	Basidiomycetes
49- L46	Detuteromycetes
50- L47	General characters of Lichens
51- P3	**Department Seminar**
52- L48	Classification Lichens
53- L49	Structure, Nutrition and Reproduction of Lichens
54- L50	Microchemical tests for Lichens
55- L51	Synthesis of Lichens
56-L52	Economic Importance of Lichens - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Ecological significance of Lichens
58-L54	Ecological significance of Lichens
59-IT-II	**Internal Test-II**
60- L55	General characters of Bryophytes including similarities & diversities
61- L56	General characters of Bryophytes including similarities & diversities
	Entering Internal Test-II Marks into University portal
62- L57	Classification of Bryophytes (G.M. Smith & Rothmaller)
63- L58	Classification of Bryophytes (G.M. Smith & Rothmaller)
64- L59	Reproduction in Bryophytes
65- L60	Reproduction in Bryophytes
66- L61	Life cycle pattern and alternation of generation
67- L62	Life cycle pattern and alternation of generation
68- L63	Life cycle pattern and alternation of generation
69- L64	Over view of Life History
70- L65	Over view of Life History
71- L66	Anthoceropsida
72- L67	Anthoceropsida
73- L68	Bryopsida
74-P4	**College level meeting/ function**
75- L69	Bryopsida
76- L70	Origin of Bryopsida

77- L71	Origin of Bryopsida
78- L72	Evolution of Bryophytes
79- L73	Evolution of Bryophytes - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Gametophytes and sporophytes in Bryophytes
81- L75	Gametophytes and sporophytes in Bryophytes
82-IT-III	**Internal Test-III**
83- L76	Gametophytes and sporophytes in Bryophytes
84- L77	Economic Importance of Bryophytes - **Test Paper distribution and result analysis**
85- L78	Economic Importance of Bryophytes
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Algae, Fungi, Lichens & Bryophytes >"
CO1	Gained knowledge about the general characteristic features of Algae,Fungi,Lichens and Bryophytes
CO2	Gained knowledge about the fossil forms of Algae and bryophytes
CO3	Learned about the Economic importance of lichen and bryophytes
CO4	Learned about the ecological significance of lichens .
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Algae and bryophytes, fungus prescribed in the syllabus.
EL2	Observation of microscopic forms of Algae prescribed in the syllabus
EL3	
EL4	
Integrated Activity	
IA1	Field trip to sea shore area
IA2	Preparation of Algal herbarium

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

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St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Mushroom Cultivation
Course Code	HBOE41
Class	II year (2014-2015)
Semester	Odd
Staff Name	Dr. Abragam Muthukumar, Dr. R. Selva kumara, Mrs. Kanimozhi Celina
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the Basic knowledge about Mushrooms their Morphology, Distribution & types.
- To know how to identify edible & poisonous mushrooms.
- To know the nutritional value of edible mushrooms.
- To know the medicinal values of mushrooms.
- To know about the methods & steps in cultivation of mushrooms.

Syllabus

MUSHROOM CULTIVATION

UNIT I

Introduction – history – Mushrooms – Morphology, distribution and types. Identification of edible and poisonous mushrooms – Nutritive values and Medicinal values.

UNIT II

Life cycle study of the species – *Pleurotus, Agaricus, Volvariella, Calocybe and Lactarius*, - breeding and genetic improvements of mushroom strains.

UNIT III

Cultivation – Conditions for tropical countries, isolation, spawn production, growth media, spawn running and harvesting. Factors affecting cultivation of mushrooms.

UNIT IV

Diseases and post – harvest technology – Insect pests, nematodes, mites, Viruses, fungal competitors and other important diseases, Post-harvest technology – harvesting, freeze drying, blanching, steeping, canning, pickling, and packaging.

UNIT V

Short term and long term storage, marketing – recipes from mushrooms. Common Indian mushrooms – distribution, production level, economic return, foreign exchange from mushroom cultivation countries and International trade. Prospects scope of mushroom cultivation in small scale Industries.

NOTE

Training in Mushroom cultivation can be given. Nutritional value can be determined. Visit to places of mushroom cultivation can be arranged.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	Introduction of Mushroom Cultivation
2-L2	Introduction of Mushroom Cultivation
3- L3	History of Mushroom Cultivation
4-L4	History of Mushroom Cultivation
5-L5	Mushrooms – Morphology, distribution and types
6-L6	Mushrooms – Morphology, distribution and types
7-L7	Mushrooms – Morphology, distribution and types
8-L8	Identification of edible and poisonous mushrooms
9-L9	Identification of edible and poisonous mushrooms
10-P1	**Welcoming of First year and Inauguration of Mathematics Association**
11-L10	Identification of edible and poisonous mushrooms
12-L11	Nutritive values
13-L12	Medicinal values
14-L13	Medicinal values
15-L14	*Pleurotus* - Life cycle study
16-L15	*Pleurotus* - Life cycle study
17-L16	*Agaricus,*
18-L17	*Agaricus,*
19-L18	*Volvariella*

20-L19	*Volvariella*
21-L20	*Calocybe*
22-L21	*Calocybe*
23-L22	*Lactarius* - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Lactarius*
25-L24	Breeding and genetic improvements of mushroom strains
26-IT-1	**Internal Test-I**
27-L25	Breeding and genetic improvements of mushroom strains
28-L26	Cultivation – Conditions for tropical countries
29-L27	Cultivation – Conditions for tropical countries
30-L28	Isolation of Mushroom Cultivation - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Isolation of Mushroom Cultivation
32- L30	Spawn production of Mushroom Cultivation
33- L31	Spawn production of Mushroom Cultivation
34-P2	**College level meeting/Cell function**
35- L32	Growth media
36- L33	spawn running and harvesting
37- L34	Factors affecting cultivation of mushrooms.
38- L35	Factors affecting cultivation of mushrooms.
39- L36	Diseases and post – harvest technology – Insect pests
40- L37	Diseases and post – harvest technology – Insect pests
41- L38	Nematodes
42- L39	Mites
43- L40	Mites
44- L41	Viruses
45- L42	Viruses
46- L43	Fungal competitors
47- L44	Fungal competitors and other important diseases
48- L45	Post-harvest technology
49- L46	Post-harvest technology - Harvesting
50- L47	freeze drying
51- P3	**Department Seminar**
52- L48	freeze drying
53- L49	blanching
54- L50	blanching
55- L51	steeping
56-L52	steeping - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	canning
58-L54	canning
59-IT-II	**Internal Test-II**
60- L55	pickling
61- L56	pickling - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	packaging

63- L58	Short term and long term storage
64- L59	Short term and long term storage
65- L60	Marketing
66- L61	Marketing
67- L62	Marketing
68- L63	Recipes from mushrooms.
69- L64	Recipes from mushrooms.
70- L65	Recipes from mushrooms.
71- L66	Common Indian mushrooms – distribution
72- L67	Common Indian mushrooms – distribution
73- L68	Common Indian mushrooms – distribution
74-P4	**College level meeting/ function**
75- L69	Production level
76- L70	Production level
77- L71	Economic return
78- L72	Economic return
79- L73	Foreign exchange from mushroom cultivation countries and International trade - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Foreign exchange from mushroom cultivation countries and International trade
81- L75	Prospects scope of mushroom cultivation in small scale Industries
82-IT-III	**Internal Test-III**
83- L76	Prospects scope of mushroom cultivation in small scale Industries
84- L77	scope of mushroom cultivation in small scale Industries - **Test Paper distribution and result analysis**
85- L78	scope of mushroom cultivation in small scale Industries
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	**COs** of the course "<Mushroom Cultivation >"
CO1	General Knowledge about poisonous & edible mushrooms.
CO2	Medicinal & Nutritional values of mushrooms.
CO3	Different methods of cultivation of mushrooms
CO4	
CO5	
CO6	
CO7	

CO8	
CO9	
Experimental Learning	
EL1	
EL2	
EL3	
EL4	
Integrated Activity	
IA1	Training in Mushroom Cultivation
IA2	Visit to places of mushroom cultivation
IA3	Nutritive & Medicinal values identified.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	HBOM21
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the characters & distribution of Pteridophytes & Gymnosperms.
- To know about the life cycle patterns of Pteridophytes.
- To impart knowledge on fossil forms of Pteridophytes of different era.
- To know about the life cycle patterns of different groups of Pteridophytes & Gymnosperms prescribed in the syllabus.

Syllabus

CORE PAPER 4

PLANT DIVERSITY – II

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY

UNIT I

General characteristics – Classification of Pteridophytes by Smith and K.R. Sporne – Stelar evolution – Telome theory – concept and significance – life cycle patterns – Apomictic life cycle.

UNIT II

Eusporangiate and leptosporangiate development – spore forming structures, soral evolution in ferns – Heterospory and Origin of seed habit. General account of fossil Pteridophytes – Geological era and study of the following fossil forms – *Rhynia, Lepdodendron, Sphenophyllum* and *Calamites.*

UNIT III

Range of structure, reproduction and evolution of gametophytes and sporophytes of the orders *Psilotales, Lycopodiale, Selaginellales, Isoetales, Equisetales, Ophioglossales, Osmundales, Filicales and Salviniales*. Economic importance of Pteridophytes.

UNIT IV

General characters, Affinities and evolution of Gymnosperms. Classification by Chamberlain and Sporne. Distribution of living and fossil gymnosperms in India, Economic Importance.

UNIT V

Morphology, Anatomy, reproduction, phylogeny and inter – relationships of the orders – cycadales, Ginkgoales, Coniferales and Gnetales. Study of the following fossil forms – Lyginopteris, Heterangium, Medullosa, Cycadeoidea, Pentaxylon, Cordaites.

PRACTICALS

PTERIDOPHYTES

Rhynia, Lepidodendron, Sphenophyllum, Calamites.

Isoetes, Equisetum, Ophioglossum, Angiopteris, Lygodium, Gleichenia.

Pteris, Adiantum Salvinia / Azolla.

GYMNOSPERMS

Lyginopteris, Heterangium, Cordaites, Medullosa, Cupressus, Podocarpus, Araucaria, Ephedra / Gnetum.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	General characteristic features of Pteridophytes
2-L2	Classification of Pteridophytes by Smith and K.R. Sporne
3- L3	Classification of Pteridophytes by Smith and K.R. Sporne
4-L4	Stelar evolution in Pteridophytes
5-L5	Stelar evolution in Pteridophytes
6-L6	Telome theory concept and significance
7-L7	Telome theory concept and significance
8-L8	Life cycle patterns

9-L9	Apomictic life cycle
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Development of Eusporangiate and leptosporangiate
12-L11	Development of Eusporangiate and leptosporangiate
13-L12	Spore forming structures
14-L13	Soral evolution in ferns
15-L14	Heterospory and Origin of seed habit
16-L15	Heterospory and Origin of seed habit
17-L16	General account of fossil Pteridophytes
18-L17	*Rhynia* – Structure, Reproduction, & Evolution
19-L18	*Rhynia* – Structure, Reproduction, & Evolution
20-L19	*Lepdodendron* – Structure, Reproduction, & Evolution
21-L20	*Lepdodendron* – Structure, Reproduction, & Evolution
22-L21	*Sphenophyllum* – Structure, Reproduction, & Evolution
23-L22	*Sphenophyllum* – Structure, Reproduction, & Evolution - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Calamites* – Structure, Reproduction, & Evolution
25-L24	*Calamites* – Structure, Reproduction, & Evolution
26-IT-1	**Internal Test-I**
27-L25	*Psilotales* – Structure, Reproduction, & Evolution
28-L26	*Psilotales* – Structure, Reproduction, & Evolution
29-L27	*Lycopodiales* – Structure, Reproduction, & Evolution
30-L28	*Lycopodiales* – Structure, Reproduction, & Evolution - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	*Lycopodiales* – Structure, Reproduction, & Evolution
32- L30	*Selaginellales* – Structure, Reproduction, & Evolution
33- L31	*Selaginellales* – Structure, Reproduction, & Evolution
34-P2	**College level meeting/Cell function**
35- L32	*Isoetales* – Structure, Reproduction, & Evolution
36- L33	*Isoetales* – Structure, Reproduction, & Evolution
37- L34	*Equisetales* – Structure, Reproduction, & Evolution
38- L35	*Equisetales* – Structure, Reproduction, & Evolution
39- L36	*Equisetales* – Structure, Reproduction, & Evolution
40- L37	*Ophioglossales* – Structure, Reproduction, & Evolution
41- L38	*Ophioglossales* – Structure, Reproduction, & Evolution
42- L39	*Osmundales* – Structure, Reproduction, & Evolution
43- L40	*Osmundales* – Structure, Reproduction, & Evolution
44- L41	*Osmundales* – Structure, Reproduction, & Evolution
45- L42	*Filicales* – Structure, Reproduction, & Evolution
46- L43	*Filicales* – Structure, Reproduction, & Evolution
47- L44	*Filicales* – Structure, Reproduction, & Evolution
48- L45	*Salviniales* – Structure, Reproduction, & Evolution
49- L46	*Salviniales* – Structure, Reproduction, & Evolution
50- L47	*Salviniales* – Structure, Reproduction, & Evolution
51- P3	**Department Seminar**
52- L48	Economic Importance of Pteridophytes

53- L49	Economic Importance of Pteridophytes
54- L50	General characters, Affinities and evolution of Gymnosperms
55- L51	General characters, Affinities and evolution of Gymnosperms
56-L52	Classification by Chamberlain and Sporne - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Classification by Chamberlain and Sporne
58-L54	Classification by Chamberlain and Sporne
59-IT-II	**Internal Test-II**
60- L55	Distribution of living and fossil gymnosperms in India
61- L56	Distribution of living and fossil gymnosperms in India - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
63- L58	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
64- L59	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
65- L60	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
66- L61	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
67- L62	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
68- L63	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
69- L64	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
70- L65	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
71- L66	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
72- L67	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
73- L68	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
74-P4	**College level meeting/ function**
75- L69	Study of fossils - Lyginopteris
76- L70	Lyginopteris
77- L71	Heterangium
78- L72	Heterangium
79- L73	Medullosa - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Medullosa
81- L75	Cycadeoidea
82-IT-III	**Internal Test-III**
83- L76	Cycadeoidea
84- L77	Pentaxylon - **Test Paper distribution and result analysis**
85- L78	Cordaites
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	COs of the course "<Pteridophytes, Gymnosperms and Paleobotany >"
CO1	Gained knowledge about the characters of Pteridiphytes & Gymnosperms.
CO2	Learned about the fossil forms of Pteridiphytes & Gymnosperms.
CO3	Learned about the economic importance & both pteridophytes & Gymnosperms.
CO4	
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Pteridophyte & Gymnosperms prescribed in the syllabus.
EL2	Preparation of permanent slides.
EL3	
EL4	
Integrated Activity	
IA1	Field trip to Manjolai, Kodaiyar, & Kudiraivetti.
IA2	Preparation of double stained permanent slide.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Taxonomy of Angiosperms
Course Code	HBOM31
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari & Dr. TJS. Rajakumar
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- General account on taxonomy flora, monographs & reviews. And also about the list of books, journals in Taxonomy.
- General account on plant morphology.
- To learn about identification, nomenclature & classification of plants.
- To learn about key preparation.
- To learn about the rules & regulations of ICBN.
- To know about effective & valid publication.
- To know about the molecular systematics.
- To know about the economic importance of plants in day to day life.

Syllabus

TAXONOMY OF ANGIOSPERMS

UNIT I

Aim and scope of Taxonomy. The Concept of genus – Species concept – Taxonomic hierarchy. Taxonomic literature – check list, Manuals, Monographs, Periodicals, Data Banks, Revision.

UNIT II

Botanical Nomenclature – ICBN – Principles and role of ICBN – Typification, Principles of Priority and their limitations – Citation, Effective and Valid Publications – Rules of naming taxa (family, genus, species).

UNIT III

Identification and preparation of intended and bracketed keys – Systems of classification – Artificial – Linneaus – Natural system – Bentham & Hooker – Phylogenetic – Engler & Prantle and Takhajan. Herbarium Preparation – Methods – Regional, National and International Herbaria and their potential role.

UNIT IV

Taxonomy in relation to Cytology, Anatomy, Embryology and Phytochemistry. Role of Botanical Survay of India (BSI), Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar.

UNIT V

A detailed study with special reference to the following families,

Cleomaceae, Menispermaceae, Tiliaceae, Zygophyllaceae, Vitaceae, Sapindaceae, Mimosaceae, Onagraceae, Passifloraceae, Molluginaceae, Apiaceae, Asteraceae, Asclepiadaceae, Convolvulaceae, Bignoniaceae, Acanthaceae, Verbenaceae, Nyctaginaceae, Amaranthaceae, Euphorbiaceae, Liliaceae, Commelinaceae and Poaceae.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2014
1-L1	Aim and scope of Taxonomy
2-L2	The Concept of genus
3- L3	Species concept & Taxonomic hierarchy
4-L4	Taxonomic literature – check list, Manuals
5-L5	Monographs, Periodicals
6-L6	Data Banks, Revision
7-L7	Botanical Nomenclature
8-L8	Botanical Nomenclature
9-L9	Principles and role of ICBN
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Typification, Principles of Priority and their limitations
12-L11	Typification, Principles of Priority and their limitations
13-L12	Citation, Effective and Valid Publications
14-L13	Citation, Effective and Valid Publications
15-L14	Rules of naming taxa (family, genus, species)
16-L15	Identification and preparation of Keys
17-L16	Intended keys
18-L17	Bracketed keys

19-L18	System of classification
20-L19	Artificial – Linneaus
21-L20	Artificial – Linneaus
22-L21	Natural system of classification – Bentham & Hooker
23-L22	Natural system of classification – Bentham & Hooker - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Phylogenetic – Engler & Prantle and Takhajan
25-L24	Phylogenetic – Engler & Prantle and Takhajan
26-IT-1	**Internal Test-I**
27-L25	Preparation of Herbarium – Methods – Regional
28-L26	National and International Herbaria and their potential role.
29-L27	National and International Herbaria and their potential role.
30-L28	Taxonomy in relation to Cytology - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Taxonomy in relation to Cytology
32- L30	Anatomy
33- L31	Embryology
34-P2	**College level meeting/Cell function**
35- L32	Phytochemistry
36- L33	Role of Botanical Survay of India (BSI)
37- L34	Role of Botanical Survay of India (BSI)
38- L35	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
39- L36	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
40- L37	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
41- L38	Cleomaceae
42- L39	Cleomaceae
43- L40	Menispermaceae
44- L41	Menispermaceae
45- L42	Tiliaceae
46- L43	Tiliaceae
47- L44	Zygophyllaceae
48- L45	Zygophyllaceae
49- L46	Vitaceae,
50- L47	Vitaceae,
51- P3	**Department Seminar**
52- L48	Sapindaceae
53- L49	Sapindaceae
54- L50	Mimosaceae
55- L51	Mimosaceae
56-L52	Onagraceae - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Onagraceae
58-L54	Passifloraceae
59-IT-II	**Internal Test-II**
60- L55	Passifloraceae
61- L56	Molluginaceae - **Test Paper distribution and result analysis**

	Entering Internal Test-II Marks into University portal
62- L57	Molluginaceae
63- L58	Apiaceae
64- L59	Apiaceae
65- L60	Asteraceae
66- L61	Asteraceae
67- L62	Asclepiadaceae
68- L63	Asclepiadaceae
69- L64	Convolvulaceae
70- L65	Convolvulaceae
71- L66	Bignoniaceae
72- L67	Bignoniaceae
73- L68	Acanthaceae
74-P4	**College level meeting/ function**
75- L69	Acanthaceae
76- L70	Verbenaceae
77- L71	Nyctaginaceae
78- L72	Amaranthaceae
79- L73	Amaranthaceae - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Euphorbiaceae
81- L75	Euphorbiaceae
82-IT-III	**Internal Test-III**
83- L76	Liliaceae
84- L77	Commelinaceae - **Test Paper distribution and result analysis**
85- L78	Poaceae
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Taxonomy of Angiosperms >"
CO1	Gained knowledge about identification of plant species.
CO2	Learned key preparation.
CO3	Learned to identify binomial using flora of presidency Madras.
CO4	Learned to prepare Herbarium.
CO5	Learned to write field note.
CO6	Learned about RFLP & ISSR.
CO7	Learned about DNA Bar Coding.
CO8	Learned about the Economic important plants.
CO9	

Experimental Learning	
EL1	Floral dissection & technical describtion of plants.
EL2	Identification of plants.
EL3	Identification of Bionmial.
EL4	Preparation of herbarium & field note.
EL5	Identification of Economically important plants & their uses.
Integrated Activity	
IA1	Study tour of Taxonomic interest.
IA2	Collection of Plants.
IA3	Herbarium preparation & field notebook.
IA4	Preparation of photo album of plants prescribed in the syllabus.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Medicinal Botany & Dietetics
Course Code	KBOE41
Class	II year (2017-2018)
Semester	Even
Staff Name	Dr. R. Selva Kumari & Prof. Mrs. Kanimozhi Celina
Credits	3
L. Hours /P. Hours	3 / WK
Total 45Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 35 Hrs (5 units; 5×7=35; 07Hrs /unit)	

Course Objectives

- To know the basic knowledge on medicinal plants & its applications.
- To promote good health through diet & nutrition.
- To educate the science of nutrition in preventing development of disease.
- To educate on the nutritional standards & specifications for the healthy persons & patients.
- To impart knowledge on the therapeutic value of plant foods.

Syllabus

Medicinal Botany and Dietetics

Medicinal Botany:-

Unit –I

Study of the following plants with reference to their Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root), *Acorus calamus* (Rhizome), *Tylophora asthmatica* (leaf), *Terminalia chebula* (fruit), *Plantago ovata* (seed) and *Holarrhena antidysenterica* (bark).

Unit - II

Source, properties and medicinal uses of some phyto oils resources -Olive oil, Castor oil, Neem oil, Mentha oil and Lavender oil.

Unit - III

Dietetics- Therapeutic value of Indian plant foods- a) rice b) wheat; c) green gram, black gram, soya bean d) lemon, banana, Guava, e) Ginger, Turmeric, Coriander, Garlic, Cumin and Clove.

Unit – IV

Plant nutraceuticals- definition and sources. Study of plant foods (food as medicine) in the treatment of some selected diseases – anorexia, arthritis, constipation, diarrhoea, diabetes, psoriasis, hypertension and memory loss.

Unit- V

Plant foods as Antioxidants - Definition - types, PUFA, Probiotics, Prebiotics, Dietary fibers, Omega-3 fatty acids. Cosmeceuticals – Definition, Retinoic acid.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 07.12.2017
1-L1	Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root)
2-L2	*Acorus calamus* (Rhizome) continuation
3- L3	*Acorus calamus* (Rhizome)
4-L4	*Tylophora asthmatica* (leaf)
5 - P1	**Welcoming of First year and Inauguration of Botany Association**
6-L5	*Terminalia chebula* (fruit)
7-L6	*Plantago ovata* (seed) continuation
8-L7	*Holarrhena antidysenterica* (bark).
9- L8	Source, properties and medicinal uses of phyto oils – Olive oil - **Allotting portion for Internal Test-I**
	Internal Test I begins
10- L9	Olive oil continuation
11-IT-1	**Internal Test-I**
12-L10	Castor oil source & uses
13-L11	Castor oil properties - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
14-L12	Neem oil – Uses
15-L13	Neem oil - source & properties
16- P2	**College level meeting/Cell function**
17-L14	Mentha oil - properties

18-L15	Mentha oil – Medicinal uses
19-L16	Lavender oil – source & properties
20-L17	Lavender oil – Medicinal uses - **Allotting portion for Internal Test-II**
	Internal Test II begins
21- L18	Therapeutic values - Rice
22- IT-II	**Internal Test-II**
23-L19	Wheat - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
24-L20	Green gram
25- P3	**Department Seminar**
26-L21	Black gram
27-L22	Soya bean, Lemon
28-L23	Banana, Guava
29- P4	**College level meeting/ function**
30-L24	Ginger & Turmeric
31-L25	Coriander & Garlic
32-L26	Cumin and Clove - **Allotting portion for Internal Test-III**
	Internal Test III begins
33-L27	Plant food used in the treatment of Anorexia, Arthritis
34-IT-III	**Internal Test-III**
35-L28	Constipation, Diarrhoea, Diabetes
36-L29	Psoriasis, Hypertension And Memory Loss
37- L30	Plant foods as Antioxidants
38-L31	PUFA, Probiotics, Prebiotics
39-L32	Dietary fibers, Omega-3 fatty acids
40-L33	Cosmeceuticals – Definition, Retinoic acid - **Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
41- MT	**Model Test**
42-MT	**Model Test**
43-MT	**Model Test**
44- L34	**Model test paper distribution and previous year university question paper discussion**
45-L35	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04. 2018

Course Outcomes

Learning Outcomes	**COs** of the course "< **Medicinal Botany and Dietetics** >"
CO1	Gained knowledge about nutritive diet for different age groups.
CO2	Acquired knowledge about healthy food for normal person & patient.
CO3	Acquire knowledge in Dietetics to prevent mortality due to mal nourishment.
CO4	
CO5	
CO6	

CO7	
CO8	
CO9	
Experimental Learning	
EL1	Identification of Medicinal plants
EL2	Identification of plant foods as medicine.
EL3	Identification of plant foods as Antioxidants.
EL4	Extraction of volatile oil from medicinal palnts.
Integrated Activity	
IA1	Visit to Medicinal Garden.
IA2	Identification of medicinal plants & their uses.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Algae, Fungi, Lichens & Bryophytes
Course Code	HBOM11
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the classification and distribution of algae.
- To know about the structure and reproduction and life cycle of patherns of algae.
- To know abort origin and evolution of algae.
- To know about the economic impact of algae.
- To know the basic knowledge about general characteristic features of fungi.
- To know about the classification of fungi.
- To know about the economic importance of fungi.
- To impart knowledge on 4chens of their ecological significance.
- To know about the general characters of Bryophytes.
- To impart knowledge on the life cycle pattern of different classes of Bryophytes

Syllabus

Algae, Fungi, Lichens And Bryophytes

UNIT – I

General characters of algae including similarities and diversities. Classification of algae proposed by F.G. Fritsch, V.J. Chapman and Parker – Basis of algal classification.

Distribution – range of thallus structure – Reproduction and life cycle patterns of algae – Cyanophyceae, Chlorophyceae, Xanthophyceae, Chrysophyceae, Bacillariophyceae, Cryptophyceae, Dinophyceae, Euglenophyceae, Phaeophyceae and Rhodophyceae.

UNIT –II

Physiology and Ecology of algae. Origin and evolution of sex in algae. Fossil algae – economic importance of algae – laboratory culture and commercial cultivation of algae. Algae as indicators of water pollution.

UNIT III

General charcters of fungi. Classification of fungi proposed by Alexopoulous and Mims. Homothallism and Heterothallism in fungi – Parasexuality in fungi – Origin of fungi – Mycorrihiza. Economic importance of fungi. An over view of Zygomycetes, Basidiomycetes and Deuteromycetes including life history.

UNIT IV

A general account of lichens – classification – structure – nutrition and reproduction of lichens – Microchemical tests for lichens – Synthesis of lichens. Economic importance of lichens – Ecological significance of lichens.

UNIT V

General characters of Bryophytes including similarities and diversities. Classification of Bryophytes proposed by G.M. Smith and Rothmaller. Reproduction in Bryophytes. General life cycle pattern and alternation of generation in bryophytes. An Over view of Hepaticopsida, Anthoceropsida and Bryopsida including life history – Origin of bryophytes. Evolution of gametophytes and sporophytes in bryophytes – Economic importance of bryophytes.

PRACTICALS

ALGAE

Anabaena, Oscillatoria, Oedogonium, Enteromorpha, Padina, Turbinaria, Gracilaria.

FUNGI

Penicillium, Mucor, Xylaria, Polyporus, Agaricus

LICHENS

Any one foliose lichen, Usnea

BRYOPHYTES

Plagiochasma, Anthoceros, Polytrichum

RECORD

Algal collection trip and submission of 5 Herbaria

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2014
1-L1	General Characters of algae
2-L2	Similarities and Diversities of Algae
3- L3	Classification of Algae (F.G. Fritsch, V.J. Chapman, Parker)
4-L4	Classification of Algae
5-L5	Range of Thallus Structure
6-L6	Reproduction & Life Patterns of Algae
7-L7	Reproduction & Life Patterns of Algae
8-L8	life-history of Cyanophyceae
9-L9	life-history of Cyanophyceae
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Chlorophyceae
12-L11	Chlorophyceae
13-L12	Xanthophyceae
14-L13	Xanthophyceae
15-L14	Chrysophyceae
16-L15	Chrysophyceae
17-L16	Bacillariophyceae
18-L17	Bacillariophyceae
19-L18	Cryptophyceae
20-L19	Cryptophyceae
21-L20	Dinophyceae
22-L21	Dinophyceae
23-L22	Euglenophyceae - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Euglenophyceae
25-L24	Phaeophyceae
26-IT-1	**Internal Test-I**
27-L25	Phaeophyceae
28-L26	Rhodophyceae
29-L27	Rhodophyceae
30-L28	Physiology and Ecology of Algae - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal

31- L29	Origin & Evolution of Sex in Algae
32- L30	Fossil Algae
33- L31	Fossil Algae
34-P2	**College level meeting/Cell function**
35- L32	Economic Importance of Algae
36- L33	Laboratory culture and commercial cultivation of algae
37- L34	Algae as indicators of water pollution
38- L35	General characters of algae
39- L36	Classification of Fungi (Alexopoulous and Mims)
40- L37	Homothallism & Heterothallism in Fungi
41- L38	Parasexuality of Fungi
42- L39	Origin of Fungi, Mycorrihza
43- L40	Economic Importance of Fungi
44- L41	Over View of Zygomycetes
45- L42	Zygomycetes
46- L43	Ascomycetes
47- L44	Ascomycetes
48- L45	Basidiomycetes
49- L46	Detuteromycetes
50- L47	General characters of Lichens
51- P3	**Department Seminar**
52- L48	Classification Lichens
53- L49	Structure, Nutrition and Reproduction of Lichens
54- L50	Microchemical tests for Lichens
55- L51	Synthesis of Lichens
56-L52	Economic Importance of Lichens - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Ecological significance of Lichens
58-L54	Ecological significance of Lichens
59-IT-II	**Internal Test-II**
60- L55	General characters of Bryophytes including similarities & diversities
61- L56	General characters of Bryophytes including similarities & diversities
	Entering Internal Test-II Marks into University portal
62- L57	Classification of Bryophytes (G.M. Smith & Rothmaller)
63- L58	Classification of Bryophytes (G.M. Smith & Rothmaller)
64- L59	Reproduction in Bryophytes
65- L60	Reproduction in Bryophytes
66- L61	Life cycle pattern and alternation of generation
67- L62	Life cycle pattern and alternation of generation
68- L63	Life cycle pattern and alternation of generation
69- L64	Over view of Life History
70- L65	Over view of Life History
71- L66	Anthoceropsida
72- L67	Anthoceropsida
73- L68	Bryopsida
74-P4	**College level meeting/ function**
75- L69	Bryopsida
76- L70	Origin of Bryopsida

77- L71	Origin of Bryopsida
78- L72	Evolution of Bryophytes
79- L73	Evolution of Bryophytes - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Gametophytes and sporophytes in Bryophytes
81- L75	Gametophytes and sporophytes in Bryophytes
82-IT-III	**Internal Test-III**
83- L76	Gametophytes and sporophytes in Bryophytes
84- L77	Economic Importance of Bryophytes - **Test Paper distribution and result analysis**
85- L78	Economic Importance of Bryophytes
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Algae, Fungi, Lichens & Bryophytes >"
CO1	Gained knowledge about the general characteristic features of Algae,Fungi,Lichens and Bryophytes
CO2	Gained knowledge about the fossil forms of Algae and bryophytes
CO3	Learned about the Economic importance of lichen and bryophytes
CO4	Learned about the ecological significance of lichens .
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Algae and bryophytes, fungus prescribed in the syllabus.
EL2	Observation of microscopic forms of Algae prescribed in the syllabus
EL3	
EL4	
Integrated Activity	
IA1	Field trip to sea shore area
IA2	Preparation of Algal herbarium

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Mushroom Cultivation
Course Code	HBOE41
Class	II year (2014-2015)
Semester	Odd
Staff Name	Dr. Abragam Muthukumar, Dr. R. Selva kumara, Mrs. Kanimozhi Celina
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the Basic knowledge about Mushrooms their Morphology, Distribution & types.
- To know how to identify edible & poisonous mushrooms.
- To know the nutritional value of edible mushrooms.
- To know the medicinal values of mushrooms.
- To know about the methods & steps in cultivation of mushrooms.

Syllabus

MUSHROOM CULTIVATION

UNIT I

Introduction – history – Mushrooms – Morphology, distribution and types. Identification of edible and poisonous mushrooms – Nutritive values and Medicinal values.

UNIT II

Life cycle study of the species – *Pleurotus, Agaricus, Volvariella, Calocybe and Lactarius*, - breeding and genetic improvements of mushroom strains.

UNIT III

Cultivation – Conditions for tropical countries, isolation, spawn production, growth media, spawn running and harvesting. Factors affecting cultivation of mushrooms.

UNIT IV

Diseases and post – harvest technology – Insect pests, nematodes, mites, Viruses, fungal competitors and other important diseases, Post-harvest technology – harvesting, freeze drying, blanching, steeping, canning, pickling, and packaging.

UNIT V

Short term and long term storage, marketing – recipes from mushrooms. Common Indian mushrooms – distribution, production level, economic return, foreign exchange from mushroom cultivation countries and International trade. Prospects scope of mushroom cultivation in small scale Industries.

NOTE

Training in Mushroom cultivation can be given. Nutritional value can be determined. Visit to places of mushroom cultivation can be arranged.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	Introduction of Mushroom Cultivation
2-L2	Introduction of Mushroom Cultivation
3- L3	History of Mushroom Cultivation
4-L4	History of Mushroom Cultivation
5-L5	Mushrooms – Morphology, distribution and types
6-L6	Mushrooms – Morphology, distribution and types
7-L7	Mushrooms – Morphology, distribution and types
8-L8	Identification of edible and poisonous mushrooms
9-L9	Identification of edible and poisonous mushrooms
10-P1	**Welcoming of First year and Inauguration of Mathematics Association**
11-L10	Identification of edible and poisonous mushrooms
12-L11	Nutritive values
13-L12	Medicinal values
14-L13	Medicinal values
15-L14	*Pleurotus* - Life cycle study
16-L15	*Pleurotus* - Life cycle study
17-L16	*Agaricus,*
18-L17	*Agaricus,*
19-L18	*Volvariella*

20-L19	*Volvariella*
21-L20	*Calocybe*
22-L21	*Calocybe*
23-L22	*Lactarius* - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Lactarius*
25-L24	Breeding and genetic improvements of mushroom strains
26-IT-1	**Internal Test-I**
27-L25	Breeding and genetic improvements of mushroom strains
28-L26	Cultivation – Conditions for tropical countries
29-L27	Cultivation – Conditions for tropical countries
30-L28	Isolation of Mushroom Cultivation - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Isolation of Mushroom Cultivation
32- L30	Spawn production of Mushroom Cultivation
33- L31	Spawn production of Mushroom Cultivation
34-P2	**College level meeting/Cell function**
35- L32	Growth media
36- L33	spawn running and harvesting
37- L34	Factors affecting cultivation of mushrooms.
38- L35	Factors affecting cultivation of mushrooms.
39- L36	Diseases and post – harvest technology – Insect pests
40- L37	Diseases and post – harvest technology – Insect pests
41- L38	Nematodes
42- L39	Mites
43- L40	Mites
44- L41	Viruses
45- L42	Viruses
46- L43	Fungal competitors
47- L44	Fungal competitors and other important diseases
48- L45	Post-harvest technology
49- L46	Post-harvest technology - Harvesting
50- L47	freeze drying
51- P3	**Department Seminar**
52- L48	freeze drying
53- L49	blanching
54- L50	blanching
55- L51	steeping
56-L52	steeping - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	canning
58-L54	canning
59-IT-II	**Internal Test-II**
60- L55	pickling
61- L56	pickling - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	packaging

63- L58	Short term and long term storage
64- L59	Short term and long term storage
65- L60	Marketing
66- L61	Marketing
67- L62	Marketing
68- L63	Recipes from mushrooms.
69- L64	Recipes from mushrooms.
70- L65	Recipes from mushrooms.
71- L66	Common Indian mushrooms – distribution
72- L67	Common Indian mushrooms – distribution
73- L68	Common Indian mushrooms – distribution
74-P4	**College level meeting/ function**
75- L69	Production level
76- L70	Production level
77- L71	Economic return
78- L72	Economic return
79- L73	Foreign exchange from mushroom cultivation countries and International trade - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Foreign exchange from mushroom cultivation countries and International trade
81- L75	Prospects scope of mushroom cultivation in small scale Industries
82-IT-III	**Internal Test-III**
83- L76	Prospects scope of mushroom cultivation in small scale Industries
84- L77	scope of mushroom cultivation in small scale Industries - **Test Paper distribution and result analysis**
85- L78	scope of mushroom cultivation in small scale Industries
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	**COs** of the course "<Mushroom Cultivation >"
CO1	General Knowledge about poisonous & edible mushrooms.
CO2	Medicinal & Nutritional values of mushrooms.
CO3	Different methods of cultivation of mushrooms
CO4	
CO5	
CO6	
CO7	

CO8	
CO9	
Experimental Learning	
EL1	
EL2	
EL3	
EL4	
Integrated Activity	
IA1	Training in Mushroom Cultivation
IA2	Visit to places of mushroom cultivation
IA3	Nutritive & Medicinal values identified.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	HBOM21
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the characters & distribution of Pteridophytes & Gymnosperms.
- To know about the life cycle patterns of Pteridophytes.
- To impart knowledge on fossil forms of Pteridophytes of different era.
- To know about the life cycle patterns of different groups of Pteridophytes & Gymnosperms prescribed in the syllabus.

Syllabus

CORE PAPER 4

PLANT DIVERSITY – II

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY

UNIT I

General characteristics – Classification of Pteridophytes by Smith and K.R. Sporne – Stelar evolution – Telome theory – concept and significance – life cycle patterns – Apomictic life cycle.

UNIT II

Eusporangiate and leptosporangiate development – spore forming structures, soral evolution in ferns – Heterospory and Origin of seed habit. General account of fossil Pteridophytes – Geological era and study of the following fossil forms – *Rhynia, Lepdodendron, Sphenophyllum* and *Calamites.*

UNIT III

Range of structure, reproduction and evolution of gametophytes and sporophytes of the orders *Psilotales, Lycopodiale, Selaginellales, Isoetales, Equisetales, Ophioglossales, Osmundales, Filicales and Salviniales*. Economic importance of Pteridophytes.

UNIT IV

General characters, Affinities and evolution of Gymnosperms. Classification by Chamberlain and Sporne. Distribution of living and fossil gymnosperms in India, Economic Importance.

UNIT V

Morphology, Anatomy, reproduction, phylogeny and inter – relationships of the orders – cycadales, Ginkgoales, Coniferales and Gnetales. Study of the following fossil forms – Lyginopteris, Heterangium, Medullosa, Cycadeoidea, Pentaxylon, Cordaites.

PRACTICALS

PTERIDOPHYTES

Rhynia, Lepidodendron, Sphenophyllum, Calamites.

Isoetes, Equisetum, Ophioglossum, Angiopteris, Lygodium, Gleichenia.

Pteris, Adiantum Salvinia / Azolla.

GYMNOSPERMS

Lyginopteris, Heterangium, Cordaites, Medullosa, Cupressus, Podocarpus, Araucaria, Ephedra / Gnetum.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	General characteristic features of Pteridophytes
2-L2	Classification of Pteridophytes by Smith and K.R. Sporne
3- L3	Classification of Pteridophytes by Smith and K.R. Sporne
4-L4	Stelar evolution in Pteridophytes
5-L5	Stelar evolution in Pteridophytes
6-L6	Telome theory concept and significance
7-L7	Telome theory concept and significance
8-L8	Life cycle patterns

9-L9	Apomictic life cycle
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Development of Eusporangiate and leptosporangiate
12-L11	Development of Eusporangiate and leptosporangiate
13-L12	Spore forming structures
14-L13	Soral evolution in ferns
15-L14	Heterospory and Origin of seed habit
16-L15	Heterospory and Origin of seed habit
17-L16	General account of fossil Pteridophytes
18-L17	*Rhynia* – Structure, Reproduction, & Evolution
19-L18	*Rhynia* – Structure, Reproduction, & Evolution
20-L19	*Lepdodendron* – Structure, Reproduction, & Evolution
21-L20	*Lepdodendron* – Structure, Reproduction, & Evolution
22-L21	*Sphenophyllum* – Structure, Reproduction, & Evolution
23-L22	*Sphenophyllum* – Structure, Reproduction, & Evolution - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Calamites* – Structure, Reproduction, & Evolution
25-L24	*Calamites* – Structure, Reproduction, & Evolution
26-IT-1	**Internal Test-I**
27-L25	*Psilotales* – Structure, Reproduction, & Evolution
28-L26	*Psilotales* – Structure, Reproduction, & Evolution
29-L27	*Lycopodiales* – Structure, Reproduction, & Evolution
30-L28	*Lycopodiales* – Structure, Reproduction, & Evolution - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	*Lycopodiales* – Structure, Reproduction, & Evolution
32- L30	*Selaginellales* – Structure, Reproduction, & Evolution
33- L31	*Selaginellales* – Structure, Reproduction, & Evolution
34-P2	**College level meeting/Cell function**
35- L32	*Isoetales* – Structure, Reproduction, & Evolution
36- L33	*Isoetales* – Structure, Reproduction, & Evolution
37- L34	*Equisetales* – Structure, Reproduction, & Evolution
38- L35	*Equisetales* – Structure, Reproduction, & Evolution
39- L36	*Equisetales* – Structure, Reproduction, & Evolution
40- L37	*Ophioglossales* – Structure, Reproduction, & Evolution
41- L38	*Ophioglossales* – Structure, Reproduction, & Evolution
42- L39	*Osmundales* – Structure, Reproduction, & Evolution
43- L40	*Osmundales* – Structure, Reproduction, & Evolution
44- L41	*Osmundales* – Structure, Reproduction, & Evolution
45- L42	*Filicales* – Structure, Reproduction, & Evolution
46- L43	*Filicales* – Structure, Reproduction, & Evolution
47- L44	*Filicales* – Structure, Reproduction, & Evolution
48- L45	*Salviniales* – Structure, Reproduction, & Evolution
49- L46	*Salviniales* – Structure, Reproduction, & Evolution
50- L47	*Salviniales* – Structure, Reproduction, & Evolution
51- P3	**Department Seminar**
52- L48	Economic Importance of Pteridophytes

53- L49	Economic Importance of Pteridophytes
54- L50	General characters, Affinities and evolution of Gymnosperms
55- L51	General characters, Affinities and evolution of Gymnosperms
56-L52	Classification by Chamberlain and Sporne - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Classification by Chamberlain and Sporne
58-L54	Classification by Chamberlain and Sporne
59-IT-II	**Internal Test-II**
60- L55	Distribution of living and fossil gymnosperms in India
61- L56	Distribution of living and fossil gymnosperms in India - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
63- L58	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
64- L59	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
65- L60	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
66- L61	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
67- L62	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
68- L63	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
69- L64	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
70- L65	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
71- L66	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
72- L67	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
73- L68	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
74-P4	**College level meeting/ function**
75- L69	Study of fossils - Lyginopteris
76- L70	Lyginopteris
77- L71	Heterangium
78- L72	Heterangium
79- L73	Medullosa - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Medullosa
81- L75	Cycadeoidea
82-IT-III	**Internal Test-III**
83- L76	Cycadeoidea
84- L77	Pentaxylon - **Test Paper distribution and result analysis**
85- L78	Cordaites
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	COs of the course "<Pteridophytes, Gymnosperms and Paleobotany >"
CO1	Gained knowledge about the characters of Pteridiphytes & Gymnosperms.
CO2	Learned about the fossil forms of Pteridiphytes & Gymnosperms.
CO3	Learned about the economic importance & both pteridophytes & Gymnosperms.
CO4	
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Pteridophyte & Gymnosperms prescribed in the syllabus.
EL2	Preparation of permanent slides.
EL3	
EL4	
Integrated Activity	
IA1	Field trip to Manjolai, Kodaiyar, & Kudiraivetti.
IA2	Preparation of double stained permanent slide.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Taxonomy of Angiosperms
Course Code	HBOM31
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari & Dr. TJS. Rajakumar
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- General account on taxonomy flora, monographs & reviews. And also about the list of books, journals in Taxonomy.
- General account on plant morphology.
- To learn about identification, nomenclature & classification of plants.
- To learn about key preparation.
- To learn about the rules & regulations of ICBN.
- To know about effective & valid publication.
- To know about the molecular systematics.
- To know about the economic importance of plants in day to day life.

Syllabus

TAXONOMY OF ANGIOSPERMS

UNIT I

Aim and scope of Taxonomy. The Concept of genus – Species concept – Taxonomic hierarchy. Taxonomic literature – check list, Manuals, Monographs, Periodicals, Data Banks, Revision.

UNIT II

Botanical Nomenclature – ICBN – Principles and role of ICBN – Typification, Principles of Priority and their limitations – Citation, Effective and Valid Publications – Rules of naming taxa (family, genus, species).

UNIT III

Identification and preparation of intended and bracketed keys – Systems of classification – Artificial – Linneaus – Natural system – Bentham & Hooker – Phylogenetic – Engler & Prantle and Takhajan. Herbarium Preparation – Methods – Regional, National and International Herbaria and their potential role.

UNIT IV

Taxonomy in relation to Cytology, Anatomy, Embryology and Phytochemistry. Role of Botanical Survay of India (BSI), Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar.

UNIT V

A detailed study with special reference to the following families,

Cleomaceae, Menispermaceae, Tiliaceae, Zygophyllaceae, Vitaceae, Sapindaceae, Mimosaceae, Onagraceae, Passifloraceae, Molluginaceae, Apiaceae, Asteraceae, Asclepiadaceae, Convolvulaceae, Bignoniaceae, Acanthaceae, Verbenaceae, Nyctaginaceae, Amaranthaceae, Euphorbiaceae, Liliaceae, Commelinaceae and Poaceae.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2014
1-L1	Aim and scope of Taxonomy
2-L2	The Concept of genus
3- L3	Species concept & Taxonomic hierarchy
4-L4	Taxonomic literature – check list, Manuals
5-L5	Monographs, Periodicals
6-L6	Data Banks, Revision
7-L7	Botanical Nomenclature
8-L8	Botanical Nomenclature
9-L9	Principles and role of ICBN
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Typification, Principles of Priority and their limitations
12-L11	Typification, Principles of Priority and their limitations
13-L12	Citation, Effective and Valid Publications
14-L13	Citation, Effective and Valid Publications
15-L14	Rules of naming taxa (family, genus, species)
16-L15	Identification and preparation of Keys
17-L16	Intended keys
18-L17	Bracketed keys

19-L18	System of classification
20-L19	Artificial – Linneaus
21-L20	Artificial – Linneaus
22-L21	Natural system of classification – Bentham & Hooker
23-L22	Natural system of classification – Bentham & Hooker - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Phylogenetic – Engler & Prantle and Takhajan
25-L24	Phylogenetic – Engler & Prantle and Takhajan
26-IT-1	**Internal Test-I**
27-L25	Preparation of Herbarium – Methods – Regional
28-L26	National and International Herbaria and their potential role.
29-L27	National and International Herbaria and their potential role.
30-L28	Taxonomy in relation to Cytology - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Taxonomy in relation to Cytology
32- L30	Anatomy
33- L31	Embryology
34-P2	**College level meeting/Cell function**
35- L32	Phytochemistry
36- L33	Role of Botanical Survay of India (BSI)
37- L34	Role of Botanical Survay of India (BSI)
38- L35	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
39- L36	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
40- L37	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
41- L38	Cleomaceae
42- L39	Cleomaceae
43- L40	Menispermaceae
44- L41	Menispermaceae
45- L42	Tiliaceae
46- L43	Tiliaceae
47- L44	Zygophyllaceae
48- L45	Zygophyllaceae
49- L46	Vitaceae,
50- L47	Vitaceae,
51- P3	**Department Seminar**
52- L48	Sapindaceae
53- L49	Sapindaceae
54- L50	Mimosaceae
55- L51	Mimosaceae
56-L52	Onagraceae - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Onagraceae
58-L54	Passifloraceae
59-IT-II	**Internal Test-II**
60- L55	Passifloraceae
61- L56	Molluginaceae - **Test Paper distribution and result analysis**

	Entering Internal Test-II Marks into University portal
62- L57	Molluginaceae
63- L58	Apiaceae
64- L59	Apiaceae
65- L60	Asteraceae
66- L61	Asteraceae
67- L62	Asclepiadaceae
68- L63	Asclepiadaceae
69- L64	Convolvulaceae
70- L65	Convolvulaceae
71- L66	Bignoniaceae
72- L67	Bignoniaceae
73- L68	Acanthaceae
74-P4	**College level meeting/ function**
75- L69	Acanthaceae
76- L70	Verbenaceae
77- L71	Nyctaginaceae
78- L72	Amaranthaceae
79- L73	Amaranthaceae - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Euphorbiaceae
81- L75	Euphorbiaceae
82-IT-III	**Internal Test-III**
83- L76	Liliaceae
84- L77	Commelinaceae - **Test Paper distribution and result analysis**
85- L78	Poaceae
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Taxonomy of Angiosperms >"
CO1	Gained knowledge about identification of plant species.
CO2	Learned key preparation.
CO3	Learned to identify binomial using flora of presidency Madras.
CO4	Learned to prepare Herbarium.
CO5	Learned to write field note.
CO6	Learned about RFLP & ISSR.
CO7	Learned about DNA Bar Coding.
CO8	Learned about the Economic important plants.
CO9	

Experimental Learning	
EL1	Floral dissection & technical describtion of plants.
EL2	Identification of plants.
EL3	Identification of Bionmial.
EL4	Preparation of herbarium & field note.
EL5	Identification of Economically important plants & their uses.
Integrated Activity	
IA1	Study tour of Taxonomic interest.
IA2	Collection of Plants.
IA3	Herbarium preparation & field notebook.
IA4	Preparation of photo album of plants prescribed in the syllabus.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Medicinal Botany & Dietetics
Course Code	KBOE41
Class	II year (2017-2018)
Semester	Even
Staff Name	Dr. R. Selva Kumari & Prof. Mrs. Kanimozhi Celina
Credits	3
L. Hours /P. Hours	3 / WK
Total 45Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 35 Hrs (5 units; 5×7=35; 07Hrs /unit)	

Course Objectives

- To know the basic knowledge on medicinal plants & its applications.
- To promote good health through diet & nutrition.
- To educate the science of nutrition in preventing development of disease.
- To educate on the nutritional standards & specifications for the healthy persons & patients.
- To impart knowledge on the therapeutic value of plant foods.

Syllabus

Medicinal Botany and Dietetics

Medicinal Botany:-

Unit –I

Study of the following plants with reference to their Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root), *Acorus calamus* (Rhizome), *Tylophora asthmatica* (leaf), *Terminalia chebula* (fruit), *Plantago ovata* (seed) and *Holarrhena antidysenterica* (bark).

Unit - II

Source, properties and medicinal uses of some phyto oils resources -Olive oil, Castor oil, Neem oil, Mentha oil and Lavender oil.

Unit - III

Dietetics- Therapeutic value of Indian plant foods- a) rice b) wheat; c) green gram, black gram, soya bean d) lemon, banana, Guava, e) Ginger, Turmeric, Coriander, Garlic, Cumin and Clove.

Unit – IV

Plant nutraceuticals- definition and sources. Study of plant foods (food as medicine) in the treatment of some selected diseases – anorexia, arthritis, constipation, diarrhoea, diabetes, psoriasis, hypertension and memory loss.

Unit- V

Plant foods as Antioxidants - Definition - types, PUFA, Probiotics, Prebiotics, Dietary fibers, Omega-3 fatty acids. Cosmeceuticals – Definition, Retinoic acid.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 07.12.2017
1-L1	Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root)
2-L2	*Acorus calamus* (Rhizome) continuation
3- L3	*Acorus calamus* (Rhizome)
4-L4	*Tylophora asthmatica* (leaf)
5 - P1	**Welcoming of First year and Inauguration of Botany Association**
6-L5	*Terminalia chebula* (fruit)
7-L6	*Plantago ovata* (seed) continuation
8-L7	*Holarrhena antidysenterica* (bark).
9- L8	Source, properties and medicinal uses of phyto oils – Olive oil - **Allotting portion for Internal Test-I**
	Internal Test I begins
10- L9	Olive oil continuation
11-IT-1	**Internal Test-I**
12-L10	Castor oil source & uses
13-L11	Castor oil properties - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
14-L12	Neem oil – Uses
15-L13	Neem oil - source & properties
16- P2	**College level meeting/Cell function**
17-L14	Mentha oil - properties

18-L15	Mentha oil – Medicinal uses
19-L16	Lavender oil – source & properties
20-L17	Lavender oil – Medicinal uses - **Allotting portion for Internal Test-II**
	Internal Test II begins
21- L18	Therapeutic values - Rice
22- IT-II	**Internal Test-II**
23-L19	Wheat - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
24-L20	Green gram
25- P3	**Department Seminar**
26-L21	Black gram
27-L22	Soya bean, Lemon
28-L23	Banana, Guava
29- P4	**College level meeting/ function**
30-L24	Ginger & Turmeric
31-L25	Coriander & Garlic
32-L26	Cumin and Clove - **Allotting portion for Internal Test-III**
	Internal Test III begins
33-L27	Plant food used in the treatment of Anorexia, Arthritis
34-IT-III	**Internal Test-III**
35-L28	Constipation, Diarrhoea, Diabetes
36-L29	Psoriasis, Hypertension And Memory Loss
37- L30	Plant foods as Antioxidants
38-L31	PUFA, Probiotics, Prebiotics
39-L32	Dietary fibers, Omega-3 fatty acids
40-L33	Cosmeceuticals – Definition, Retinoic acid - **Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
41- MT	**Model Test**
42-MT	**Model Test**
43-MT	**Model Test**
44- L34	**Model test paper distribution and previous year university question paper discussion**
45-L35	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04. 2018

Course Outcomes

Learning Outcomes	**COs** of the course "< **Medicinal Botany and Dietetics** >"
CO1	Gained knowledge about nutritive diet for different age groups.
CO2	Acquired knowledge about healthy food for normal person & patient.
CO3	Acquire knowledge in Dietetics to prevent mortality due to mal nourishment.
CO4	
CO5	
CO6	

CO7	
CO8	
CO9	
Experimental Learning	
EL1	Identification of Medicinal plants
EL2	Identification of plant foods as medicine.
EL3	Identification of plant foods as Antioxidants.
EL4	Extraction of volatile oil from medicinal palnts.
Integrated Activity	
IA1	Visit to Medicinal Garden.
IA2	Identification of medicinal plants & their uses.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Algae, Fungi, Lichens & Bryophytes
Course Code	HBOM11
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the classification and distribution of algae.
- To know about the structure and reproduction and life cycle of patherns of algae.
- To know abort origin and evolution of algae.
- To know about the economic impact of algae.
- To know the basic knowledge about general characteristic features of fungi.
- To know about the classification of fungi.
- To know about the economic importance of fungi.
- To impart knowledge on 4chens of their ecological significance.
- To know about the general characters of Bryophytes.
- To impart knowledge on the life cycle pattern of different classes of Bryophytes

Syllabus

Algae, Fungi, Lichens And Bryophytes

UNIT – I

General characters of algae including similarities and diversities. Classification of algae proposed by F.G. Fritsch, V.J. Chapman and Parker – Basis of algal classification.

Distribution – range of thallus structure – Reproduction and life cycle patterns of algae – Cyanophyceae, Chlorophyceae, Xanthophyceae, Chrysophyceae, Bacillariophyceae, Cryptophyceae, Dinophyceae, Euglenophyceae, Phaeophyceae and Rhodophyceae.

UNIT –II

Physiology and Ecology of algae. Origin and evolution of sex in algae. Fossil algae – economic importance of algae – laboratory culture and commercial cultivation of algae. Algae as indicators of water pollution.

UNIT III

General charcters of fungi. Classification of fungi proposed by Alexopoulous and Mims. Homothallism and Heterothallism in fungi – Parasexuality in fungi – Origin of fungi – Mycorrihiza. Economic importance of fungi. An over view of Zygomycetes, Basidiomycetes and Deuteromycetes including life history.

UNIT IV

A general account of lichens – classification – structure – nutrition and reproduction of lichens – Microchemical tests for lichens – Synthesis of lichens. Economic importance of lichens – Ecological significance of lichens.

UNIT V

General characters of Bryophytes including similarities and diversities. Classification of Bryophytes proposed by G.M. Smith and Rothmaller. Reproduction in Bryophytes. General life cycle pattern and alternation of generation in bryophytes. An Over view of Hepaticopsida, Anthoceropsida and Bryopsida including life history – Origin of bryophytes. Evolution of gametophytes and sporophytes in bryophytes – Economic importance of bryophytes.

PRACTICALS

ALGAE

Anabaena, Oscillatoria, Oedogonium, Enteromorpha, Padina, Turbinaria, Gracilaria.

FUNGI

Penicillium, Mucor, Xylaria, Polyporus, Agaricus

LICHENS

Any one foliose lichen, Usnea

BRYOPHYTES

Plagiochasma, Anthoceros, Polytrichum

RECORD

Algal collection trip and submission of 5 Herbaria

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2014
1-L1	General Characters of algae
2-L2	Similarities and Diversities of Algae
3- L3	Classification of Algae (F.G. Fritsch, V.J. Chapman, Parker)
4-L4	Classification of Algae
5-L5	Range of Thallus Structure
6-L6	Reproduction & Life Patterns of Algae
7-L7	Reproduction & Life Patterns of Algae
8-L8	life-history of Cyanophyceae
9-L9	life-history of Cyanophyceae
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Chlorophyceae
12-L11	Chlorophyceae
13-L12	Xanthophyceae
14-L13	Xanthophyceae
15-L14	Chrysophyceae
16-L15	Chrysophyceae
17-L16	Bacillariophyceae
18-L17	Bacillariophyceae
19-L18	Cryptophyceae
20-L19	Cryptophyceae
21-L20	Dinophyceae
22-L21	Dinophyceae
23-L22	Euglenophyceae - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Euglenophyceae
25-L24	Phaeophyceae
26-IT-1	**Internal Test-I**
27-L25	Phaeophyceae
28-L26	Rhodophyceae
29-L27	Rhodophyceae
30-L28	Physiology and Ecology of Algae - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal

31- L29	Origin & Evolution of Sex in Algae
32- L30	Fossil Algae
33- L31	Fossil Algae
34-P2	**College level meeting/Cell function**
35- L32	Economic Importance of Algae
36- L33	Laboratory culture and commercial cultivation of algae
37- L34	Algae as indicators of water pollution
38- L35	General characters of algae
39- L36	Classification of Fungi (Alexopoulous and Mims)
40- L37	Homothallism & Heterothallism in Fungi
41- L38	Parasexuality of Fungi
42- L39	Origin of Fungi, Mycorrihza
43- L40	Economic Importance of Fungi
44- L41	Over View of Zygomycetes
45- L42	Zygomycetes
46- L43	Ascomycetes
47- L44	Ascomycetes
48- L45	Basidiomycetes
49- L46	Detuteromycetes
50- L47	General characters of Lichens
51- P3	**Department Seminar**
52- L48	Classification Lichens
53- L49	Structure, Nutrition and Reproduction of Lichens
54- L50	Microchemical tests for Lichens
55- L51	Synthesis of Lichens
56-L52	Economic Importance of Lichens - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Ecological significance of Lichens
58-L54	Ecological significance of Lichens
59-IT-II	**Internal Test-II**
60- L55	General characters of Bryophytes including similarities & diversities
61- L56	General characters of Bryophytes including similarities & diversities
	Entering Internal Test-II Marks into University portal
62- L57	Classification of Bryophytes (G.M. Smith & Rothmaller)
63- L58	Classification of Bryophytes (G.M. Smith & Rothmaller)
64- L59	Reproduction in Bryophytes
65- L60	Reproduction in Bryophytes
66- L61	Life cycle pattern and alternation of generation
67- L62	Life cycle pattern and alternation of generation
68- L63	Life cycle pattern and alternation of generation
69- L64	Over view of Life History
70- L65	Over view of Life History
71- L66	Anthoceropsida
72- L67	Anthoceropsida
73- L68	Bryopsida
74-P4	**College level meeting/ function**
75- L69	Bryopsida
76- L70	Origin of Bryopsida

77- L71	Origin of Bryopsida
78- L72	Evolution of Bryophytes
79- L73	Evolution of Bryophytes - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Gametophytes and sporophytes in Bryophytes
81- L75	Gametophytes and sporophytes in Bryophytes
82-IT-III	**Internal Test-III**
83- L76	Gametophytes and sporophytes in Bryophytes
84- L77	Economic Importance of Bryophytes - **Test Paper distribution and result analysis**
85- L78	Economic Importance of Bryophytes
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Algae, Fungi, Lichens & Bryophytes >"
CO1	Gained knowledge about the general characteristic features of Algae,Fungi,Lichens and Bryophytes
CO2	Gained knowledge about the fossil forms of Algae and bryophytes
CO3	Learned about the Economic importance of lichen and bryophytes
CO4	Learned about the ecological significance of lichens .
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Algae and bryophytes, fungus prescribed in the syllabus.
EL2	Observation of microscopic forms of Algae prescribed in the syllabus
EL3	
EL4	
Integrated Activity	
IA1	Field trip to sea shore area
IA2	Preparation of Algal herbarium

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Mushroom Cultivation
Course Code	HBOE41
Class	II year (2014-2015)
Semester	Odd
Staff Name	Dr. Abragam Muthukumar, Dr. R. Selva kumara, Mrs. Kanimozhi Celina
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the Basic knowledge about Mushrooms their Morphology, Distribution & types.
- To know how to identify edible & poisonous mushrooms.
- To know the nutritional value of edible mushrooms.
- To know the medicinal values of mushrooms.
- To know about the methods & steps in cultivation of mushrooms.

Syllabus

MUSHROOM CULTIVATION

UNIT I

Introduction – history – Mushrooms – Morphology, distribution and types. Identification of edible and poisonous mushrooms – Nutritive values and Medicinal values.

UNIT II

Life cycle study of the species – *Pleurotus, Agaricus, Volvariella, Calocybe and Lactarius*, - breeding and genetic improvements of mushroom strains.

UNIT III

Cultivation – Conditions for tropical countries, isolation, spawn production, growth media, spawn running and harvesting. Factors affecting cultivation of mushrooms.

UNIT IV

Diseases and post – harvest technology – Insect pests, nematodes, mites, Viruses, fungal competitors and other important diseases, Post-harvest technology – harvesting, freeze drying, blanching, steeping, canning, pickling, and packaging.

UNIT V

Short term and long term storage, marketing – recipes from mushrooms. Common Indian mushrooms – distribution, production level, economic return, foreign exchange from mushroom cultivation countries and International trade. Prospects scope of mushroom cultivation in small scale Industries.

NOTE

Training in Mushroom cultivation can be given. Nutritional value can be determined. Visit to places of mushroom cultivation can be arranged.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	Introduction of Mushroom Cultivation
2-L2	Introduction of Mushroom Cultivation
3- L3	History of Mushroom Cultivation
4-L4	History of Mushroom Cultivation
5-L5	Mushrooms – Morphology, distribution and types
6-L6	Mushrooms – Morphology, distribution and types
7-L7	Mushrooms – Morphology, distribution and types
8-L8	Identification of edible and poisonous mushrooms
9-L9	Identification of edible and poisonous mushrooms
10-P1	**Welcoming of First year and Inauguration of Mathematics Association**
11-L10	Identification of edible and poisonous mushrooms
12-L11	Nutritive values
13-L12	Medicinal values
14-L13	Medicinal values
15-L14	*Pleurotus* - Life cycle study
16-L15	*Pleurotus* - Life cycle study
17-L16	*Agaricus,*
18-L17	*Agaricus,*
19-L18	*Volvariella*

20-L19	*Volvariella*
21-L20	*Calocybe*
22-L21	*Calocybe*
23-L22	*Lactarius* - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Lactarius*
25-L24	Breeding and genetic improvements of mushroom strains
26-IT-1	**Internal Test-I**
27-L25	Breeding and genetic improvements of mushroom strains
28-L26	Cultivation – Conditions for tropical countries
29-L27	Cultivation – Conditions for tropical countries
30-L28	Isolation of Mushroom Cultivation - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Isolation of Mushroom Cultivation
32- L30	Spawn production of Mushroom Cultivation
33- L31	Spawn production of Mushroom Cultivation
34-P2	**College level meeting/Cell function**
35- L32	Growth media
36- L33	spawn running and harvesting
37- L34	Factors affecting cultivation of mushrooms.
38- L35	Factors affecting cultivation of mushrooms.
39- L36	Diseases and post – harvest technology – Insect pests
40- L37	Diseases and post – harvest technology – Insect pests
41- L38	Nematodes
42- L39	Mites
43- L40	Mites
44- L41	Viruses
45- L42	Viruses
46- L43	Fungal competitors
47- L44	Fungal competitors and other important diseases
48- L45	Post-harvest technology
49- L46	Post-harvest technology - Harvesting
50- L47	freeze drying
51- P3	**Department Seminar**
52- L48	freeze drying
53- L49	blanching
54- L50	blanching
55- L51	steeping
56-L52	steeping - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	canning
58-L54	canning
59-IT-II	**Internal Test-II**
60- L55	pickling
61- L56	pickling - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	packaging

63- L58	Short term and long term storage
64- L59	Short term and long term storage
65- L60	Marketing
66- L61	Marketing
67- L62	Marketing
68- L63	Recipes from mushrooms.
69- L64	Recipes from mushrooms.
70- L65	Recipes from mushrooms.
71- L66	Common Indian mushrooms – distribution
72- L67	Common Indian mushrooms – distribution
73- L68	Common Indian mushrooms – distribution
74-P4	**College level meeting/ function**
75- L69	Production level
76- L70	Production level
77- L71	Economic return
78- L72	Economic return
79- L73	Foreign exchange from mushroom cultivation countries and International trade - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Foreign exchange from mushroom cultivation countries and International trade
81- L75	Prospects scope of mushroom cultivation in small scale Industries
82-IT-III	**Internal Test-III**
83- L76	Prospects scope of mushroom cultivation in small scale Industries
84- L77	scope of mushroom cultivation in small scale Industries - **Test Paper distribution and result analysis**
85- L78	scope of mushroom cultivation in small scale Industries
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	**COs** of the course "<Mushroom Cultivation >"
CO1	General Knowledge about poisonous & edible mushrooms.
CO2	Medicinal & Nutritional values of mushrooms.
CO3	Different methods of cultivation of mushrooms
CO4	
CO5	
CO6	
CO7	

CO8	
CO9	
Experimental Learning	
EL1	
EL2	
EL3	
EL4	
Integrated Activity	
IA1	Training in Mushroom Cultivation
IA2	Visit to places of mushroom cultivation
IA3	Nutritive & Medicinal values identified.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	HBOM21
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the characters & distribution of Pteridophytes & Gymnosperms.
- To know about the life cycle patterns of Pteridophytes.
- To impart knowledge on fossil forms of Pteridophytes of different era.
- To know about the life cycle patterns of different groups of Pteridophytes & Gymnosperms prescribed in the syllabus.

Syllabus

CORE PAPER 4

PLANT DIVERSITY – II

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY

UNIT I

General characteristics – Classification of Pteridophytes by Smith and K.R. Sporne – Stelar evolution – Telome theory – concept and significance – life cycle patterns – Apomictic life cycle.

UNIT II

Eusporangiate and leptosporangiate development – spore forming structures, soral evolution in ferns – Heterospory and Origin of seed habit. General account of fossil Pteridophytes – Geological era and study of the following fossil forms – *Rhynia, Lepdodendron, Sphenophyllum* and *Calamites.*

UNIT III

Range of structure, reproduction and evolution of gametophytes and sporophytes of the orders *Psilotales, Lycopodiale, Selaginellales, Isoetales, Equisetales, Ophioglossales, Osmundales, Filicales and Salviniales*. Economic importance of Pteridophytes.

UNIT IV

General characters, Affinities and evolution of Gymnosperms. Classification by Chamberlain and Sporne. Distribution of living and fossil gymnosperms in India, Economic Importance.

UNIT V

Morphology, Anatomy, reproduction, phylogeny and inter – relationships of the orders – cycadales, Ginkgoales, Coniferales and Gnetales. Study of the following fossil forms – Lyginopteris, Heterangium, Medullosa, Cycadeoidea, Pentaxylon, Cordaites.

PRACTICALS

PTERIDOPHYTES

Rhynia, Lepidodendron, Sphenophyllum, Calamites.

Isoetes, Equisetum, Ophioglossum, Angiopteris, Lygodium, Gleichenia.

Pteris, Adiantum Salvinia / Azolla.

GYMNOSPERMS

Lyginopteris, Heterangium, Cordaites, Medullosa, Cupressus, Podocarpus, Araucaria, Ephedra / Gnetum.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	General characteristic features of Pteridophytes
2-L2	Classification of Pteridophytes by Smith and K.R. Sporne
3- L3	Classification of Pteridophytes by Smith and K.R. Sporne
4-L4	Stelar evolution in Pteridophytes
5-L5	Stelar evolution in Pteridophytes
6-L6	Telome theory concept and significance
7-L7	Telome theory concept and significance
8-L8	Life cycle patterns

9-L9	Apomictic life cycle
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Development of Eusporangiate and leptosporangiate
12-L11	Development of Eusporangiate and leptosporangiate
13-L12	Spore forming structures
14-L13	Soral evolution in ferns
15-L14	Heterospory and Origin of seed habit
16-L15	Heterospory and Origin of seed habit
17-L16	General account of fossil Pteridophytes
18-L17	*Rhynia* – Structure, Reproduction, & Evolution
19-L18	*Rhynia* – Structure, Reproduction, & Evolution
20-L19	*Lepdodendron* – Structure, Reproduction, & Evolution
21-L20	*Lepdodendron* – Structure, Reproduction, & Evolution
22-L21	*Sphenophyllum* – Structure, Reproduction, & Evolution
23-L22	*Sphenophyllum* – Structure, Reproduction, & Evolution - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Calamites* – Structure, Reproduction, & Evolution
25-L24	*Calamites* – Structure, Reproduction, & Evolution
26-IT-1	**Internal Test-I**
27-L25	*Psilotales* – Structure, Reproduction, & Evolution
28-L26	*Psilotales* – Structure, Reproduction, & Evolution
29-L27	*Lycopodiales* – Structure, Reproduction, & Evolution
30-L28	*Lycopodiales* – Structure, Reproduction, & Evolution - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	*Lycopodiales* – Structure, Reproduction, & Evolution
32- L30	*Selaginellales* – Structure, Reproduction, & Evolution
33- L31	*Selaginellales* – Structure, Reproduction, & Evolution
34-P2	**College level meeting/Cell function**
35- L32	*Isoetales* – Structure, Reproduction, & Evolution
36- L33	*Isoetales* – Structure, Reproduction, & Evolution
37- L34	*Equisetales* – Structure, Reproduction, & Evolution
38- L35	*Equisetales* – Structure, Reproduction, & Evolution
39- L36	*Equisetales* – Structure, Reproduction, & Evolution
40- L37	*Ophioglossales* – Structure, Reproduction, & Evolution
41- L38	*Ophioglossales* – Structure, Reproduction, & Evolution
42- L39	*Osmundales* – Structure, Reproduction, & Evolution
43- L40	*Osmundales* – Structure, Reproduction, & Evolution
44- L41	*Osmundales* – Structure, Reproduction, & Evolution
45- L42	*Filicales* – Structure, Reproduction, & Evolution
46- L43	*Filicales* – Structure, Reproduction, & Evolution
47- L44	*Filicales* – Structure, Reproduction, & Evolution
48- L45	*Salviniales* – Structure, Reproduction, & Evolution
49- L46	*Salviniales* – Structure, Reproduction, & Evolution
50- L47	*Salviniales* – Structure, Reproduction, & Evolution
51- P3	**Department Seminar**
52- L48	Economic Importance of Pteridophytes

53- L49	Economic Importance of Pteridophytes
54- L50	General characters, Affinities and evolution of Gymnosperms
55- L51	General characters, Affinities and evolution of Gymnosperms
56-L52	Classification by Chamberlain and Sporne - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Classification by Chamberlain and Sporne
58-L54	Classification by Chamberlain and Sporne
59-IT-II	**Internal Test-II**
60- L55	Distribution of living and fossil gymnosperms in India
61- L56	Distribution of living and fossil gymnosperms in India - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
63- L58	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
64- L59	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
65- L60	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
66- L61	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
67- L62	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
68- L63	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
69- L64	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
70- L65	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
71- L66	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
72- L67	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
73- L68	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
74-P4	**College level meeting/ function**
75- L69	Study of fossils - Lyginopteris
76- L70	Lyginopteris
77- L71	Heterangium
78- L72	Heterangium
79- L73	Medullosa - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Medullosa
81- L75	Cycadeoidea
82-IT-III	**Internal Test-III**
83- L76	Cycadeoidea
84- L77	Pentaxylon - **Test Paper distribution and result analysis**
85- L78	Cordaites
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	COs of the course "<Pteridophytes, Gymnosperms and Paleobotany >"
CO1	Gained knowledge about the characters of Pteridiphytes & Gymnosperms.
CO2	Learned about the fossil forms of Pteridiphytes & Gymnosperms.
CO3	Learned about the economic importance & both pteridophytes & Gymnosperms.
CO4	
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Pteridophyte & Gymnosperms prescribed in the syllabus.
EL2	Preparation of permanent slides.
EL3	
EL4	
Integrated Activity	
IA1	Field trip to Manjolai, Kodaiyar, & Kudiraivetti.
IA2	Preparation of double stained permanent slide.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Taxonomy of Angiosperms
Course Code	HBOM31
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari & Dr. TJS. Rajakumar
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- General account on taxonomy flora, monographs & reviews. And also about the list of books, journals in Taxonomy.
- General account on plant morphology.
- To learn about identification, nomenclature & classification of plants.
- To learn about key preparation.
- To learn about the rules & regulations of ICBN.
- To know about effective & valid publication.
- To know about the molecular systematics.
- To know about the economic importance of plants in day to day life.

Syllabus

TAXONOMY OF ANGIOSPERMS

UNIT I

Aim and scope of Taxonomy. The Concept of genus – Species concept – Taxonomic hierarchy. Taxonomic literature – check list, Manuals, Monographs, Periodicals, Data Banks, Revision.

UNIT II

Botanical Nomenclature – ICBN – Principles and role of ICBN – Typification, Principles of Priority and their limitations – Citation, Effective and Valid Publications – Rules of naming taxa (family, genus, species).

UNIT III

Identification and preparation of intended and bracketed keys – Systems of classification – Artificial – Linneaus – Natural system – Bentham & Hooker – Phylogenetic – Engler & Prantle and Takhajan. Herbarium Preparation – Methods – Regional, National and International Herbaria and their potential role.

UNIT IV

Taxonomy in relation to Cytology, Anatomy, Embryology and Phytochemistry. Role of Botanical Survay of India (BSI), Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar.

UNIT V

A detailed study with special reference to the following families,

Cleomaceae, Menispermaceae, Tiliaceae, Zygophyllaceae, Vitaceae, Sapindaceae, Mimosaceae, Onagraceae, Passifloraceae, Molluginaceae, Apiaceae, Asteraceae, Asclepiadaceae, Convolvulaceae, Bignoniaceae, Acanthaceae, Verbenaceae, Nyctaginaceae, Amaranthaceae, Euphorbiaceae, Liliaceae, Commelinaceae and Poaceae.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2014
1-L1	Aim and scope of Taxonomy
2-L2	The Concept of genus
3- L3	Species concept & Taxonomic hierarchy
4-L4	Taxonomic literature – check list, Manuals
5-L5	Monographs, Periodicals
6-L6	Data Banks, Revision
7-L7	Botanical Nomenclature
8-L8	Botanical Nomenclature
9-L9	Principles and role of ICBN
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Typification, Principles of Priority and their limitations
12-L11	Typification, Principles of Priority and their limitations
13-L12	Citation, Effective and Valid Publications
14-L13	Citation, Effective and Valid Publications
15-L14	Rules of naming taxa (family, genus, species)
16-L15	Identification and preparation of Keys
17-L16	Intended keys
18-L17	Bracketed keys

19-L18	System of classification
20-L19	Artificial – Linneaus
21-L20	Artificial – Linneaus
22-L21	Natural system of classification – Bentham & Hooker
23-L22	Natural system of classification – Bentham & Hooker - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Phylogenetic – Engler & Prantle and Takhajan
25-L24	Phylogenetic – Engler & Prantle and Takhajan
26-IT-1	**Internal Test-I**
27-L25	Preparation of Herbarium – Methods – Regional
28-L26	National and International Herbaria and their potential role.
29-L27	National and International Herbaria and their potential role.
30-L28	Taxonomy in relation to Cytology - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Taxonomy in relation to Cytology
32- L30	Anatomy
33- L31	Embryology
34-P2	**College level meeting/Cell function**
35- L32	Phytochemistry
36- L33	Role of Botanical Survay of India (BSI)
37- L34	Role of Botanical Survay of India (BSI)
38- L35	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
39- L36	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
40- L37	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
41- L38	Cleomaceae
42- L39	Cleomaceae
43- L40	Menispermaceae
44- L41	Menispermaceae
45- L42	Tiliaceae
46- L43	Tiliaceae
47- L44	Zygophyllaceae
48- L45	Zygophyllaceae
49- L46	Vitaceae,
50- L47	Vitaceae,
51- P3	**Department Seminar**
52- L48	Sapindaceae
53- L49	Sapindaceae
54- L50	Mimosaceae
55- L51	Mimosaceae
56-L52	Onagraceae - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Onagraceae
58-L54	Passifloraceae
59-IT-II	**Internal Test-II**
60- L55	Passifloraceae
61- L56	Molluginaceae - **Test Paper distribution and result analysis**

	Entering Internal Test-II Marks into University portal
62- L57	Molluginaceae
63- L58	Apiaceae
64- L59	Apiaceae
65- L60	Asteraceae
66- L61	Asteraceae
67- L62	Asclepiadaceae
68- L63	Asclepiadaceae
69- L64	Convolvulaceae
70- L65	Convolvulaceae
71- L66	Bignoniaceae
72- L67	Bignoniaceae
73- L68	Acanthaceae
74-P4	**College level meeting/ function**
75- L69	Acanthaceae
76- L70	Verbenaceae
77- L71	Nyctaginaceae
78- L72	Amaranthaceae
79- L73	Amaranthaceae - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Euphorbiaceae
81- L75	Euphorbiaceae
82-IT-III	**Internal Test-III**
83- L76	Liliaceae
84- L77	Commelinaceae - **Test Paper distribution and result analysis**
85- L78	Poaceae
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Taxonomy of Angiosperms >"
CO1	Gained knowledge about identification of plant species.
CO2	Learned key preparation.
CO3	Learned to identify binomial using flora of presidency Madras.
CO4	Learned to prepare Herbarium.
CO5	Learned to write field note.
CO6	Learned about RFLP & ISSR.
CO7	Learned about DNA Bar Coding.
CO8	Learned about the Economic important plants.
CO9	

Experimental Learning	
EL1	Floral dissection & technical describtion of plants.
EL2	Identification of plants.
EL3	Identification of Bionmial.
EL4	Preparation of herbarium & field note.
EL5	Identification of Economically important plants & their uses.
Integrated Activity	
IA1	Study tour of Taxonomic interest.
IA2	Collection of Plants.
IA3	Herbarium preparation & field notebook.
IA4	Preparation of photo album of plants prescribed in the syllabus.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Medicinal Botany & Dietetics
Course Code	KBOE41
Class	II year (2017-2018)
Semester	Even
Staff Name	Dr. R. Selva Kumari & Prof. Mrs. Kanimozhi Celina
Credits	3
L. Hours /P. Hours	3 / WK
Total 45Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 35 Hrs (5 units; 5×7=35; 07Hrs /unit)	

Course Objectives

- To know the basic knowledge on medicinal plants & its applications.
- To promote good health through diet & nutrition.
- To educate the science of nutrition in preventing development of disease.
- To educate on the nutritional standards & specifications for the healthy persons & patients.
- To impart knowledge on the therapeutic value of plant foods.

Syllabus

Medicinal Botany and Dietetics

Medicinal Botany:-

Unit –I

Study of the following plants with reference to their Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root), *Acorus calamus* (Rhizome), *Tylophora asthmatica* (leaf), *Terminalia chebula* (fruit), *Plantago ovata* (seed) and *Holarrhena antidysenterica* (bark).

Unit - II

Source, properties and medicinal uses of some phyto oils resources -Olive oil, Castor oil, Neem oil, Mentha oil and Lavender oil.

Unit - III

Dietetics- Therapeutic value of Indian plant foods- a) rice b) wheat; c) green gram, black gram, soya bean d) lemon, banana, Guava, e) Ginger, Turmeric, Coriander, Garlic, Cumin and Clove.

Unit – IV

Plant nutraceuticals- definition and sources. Study of plant foods (food as medicine) in the treatment of some selected diseases – anorexia, arthritis, constipation, diarrhoea, diabetes, psoriasis, hypertension and memory loss.

Unit- V

Plant foods as Antioxidants - Definition - types, PUFA, Probiotics, Prebiotics, Dietary fibers, Omega-3 fatty acids. Cosmeceuticals – Definition, Retinoic acid.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 07.12.2017
1-L1	Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root)
2-L2	*Acorus calamus* (Rhizome) continuation
3- L3	*Acorus calamus* (Rhizome)
4-L4	*Tylophora asthmatica* (leaf)
5 - P1	**Welcoming of First year and Inauguration of Botany Association**
6-L5	*Terminalia chebula* (fruit)
7-L6	*Plantago ovata* (seed) continuation
8-L7	*Holarrhena antidysenterica* (bark).
9- L8	Source, properties and medicinal uses of phyto oils – Olive oil - **Allotting portion for Internal Test-I**
	Internal Test I begins
10- L9	Olive oil continuation
11-IT-1	**Internal Test-I**
12-L10	Castor oil source & uses
13-L11	Castor oil properties - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
14-L12	Neem oil – Uses
15-L13	Neem oil - source & properties
16- P2	**College level meeting/Cell function**
17-L14	Mentha oil - properties

18-L15	Mentha oil – Medicinal uses
19-L16	Lavender oil – source & properties
20-L17	Lavender oil – Medicinal uses - **Allotting portion for Internal Test-II**
	Internal Test II begins
21- L18	Therapeutic values - Rice
22- IT-II	**Internal Test-II**
23-L19	Wheat - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
24-L20	Green gram
25- P3	**Department Seminar**
26-L21	Black gram
27-L22	Soya bean, Lemon
28-L23	Banana, Guava
29- P4	**College level meeting/ function**
30-L24	Ginger & Turmeric
31-L25	Coriander & Garlic
32-L26	Cumin and Clove - **Allotting portion for Internal Test-III**
	Internal Test III begins
33-L27	Plant food used in the treatment of Anorexia, Arthritis
34-IT-III	**Internal Test-III**
35-L28	Constipation, Diarrhoea, Diabetes
36-L29	Psoriasis, Hypertension And Memory Loss
37- L30	Plant foods as Antioxidants
38-L31	PUFA, Probiotics, Prebiotics
39-L32	Dietary fibers, Omega-3 fatty acids
40-L33	Cosmeceuticals – Definition, Retinoic acid - **Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
41- MT	**Model Test**
42-MT	**Model Test**
43-MT	**Model Test**
44- L34	**Model test paper distribution and previous year university question paper discussion**
45-L35	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04. 2018

Course Outcomes

Learning Outcomes	**COs** of the course "< **Medicinal Botany and Dietetics** >"
CO1	Gained knowledge about nutritive diet for different age groups.
CO2	Acquired knowledge about healthy food for normal person & patient.
CO3	Acquire knowledge in Dietetics to prevent mortality due to mal nourishment.
CO4	
CO5	
CO6	

CO7	
CO8	
CO9	
Experimental Learning	
EL1	Identification of Medicinal plants
EL2	Identification of plant foods as medicine.
EL3	Identification of plant foods as Antioxidants.
EL4	Extraction of volatile oil from medicinal palnts.
Integrated Activity	
IA1	Visit to Medicinal Garden.
IA2	Identification of medicinal plants & their uses.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Algae, Fungi, Lichens & Bryophytes
Course Code	HBOM11
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the classification and distribution of algae.
- To know about the structure and reproduction and life cycle of patherns of algae.
- To know abort origin and evolution of algae.
- To know about the economic impact of algae.
- To know the basic knowledge about general characteristic features of fungi.
- To know about the classification of fungi.
- To know about the economic importance of fungi.
- To impart knowledge on 4chens of their ecological significance.
- To know about the general characters of Bryophytes.
- To impart knowledge on the life cycle pattern of different classes of Bryophytes

Syllabus

Algae, Fungi, Lichens And Bryophytes

UNIT – I

General characters of algae including similarities and diversities. Classification of algae proposed by F.G. Fritsch, V.J. Chapman and Parker – Basis of algal classification.

Distribution – range of thallus structure – Reproduction and life cycle patterns of algae – Cyanophyceae, Chlorophyceae, Xanthophyceae, Chrysophyceae, Bacillariophyceae, Cryptophyceae, Dinophyceae, Euglenophyceae, Phaeophyceae and Rhodophyceae.

UNIT –II

Physiology and Ecology of algae. Origin and evolution of sex in algae. Fossil algae – economic importance of algae – laboratory culture and commercial cultivation of algae. Algae as indicators of water pollution.

UNIT III

General charcters of fungi. Classification of fungi proposed by Alexopoulous and Mims. Homothallism and Heterothallism in fungi – Parasexuality in fungi – Origin of fungi – Mycorrihiza. Economic importance of fungi. An over view of Zygomycetes, Basidiomycetes and Deuteromycetes including life history.

UNIT IV

A general account of lichens – classification – structure – nutrition and reproduction of lichens – Microchemical tests for lichens – Synthesis of lichens. Economic importance of lichens – Ecological significance of lichens.

UNIT V

General characters of Bryophytes including similarities and diversities. Classification of Bryophytes proposed by G.M. Smith and Rothmaller. Reproduction in Bryophytes. General life cycle pattern and alternation of generation in bryophytes. An Over view of Hepaticopsida, Anthoceropsida and Bryopsida including life history – Origin of bryophytes. Evolution of gametophytes and sporophytes in bryophytes – Economic importance of bryophytes.

PRACTICALS

ALGAE

Anabaena, Oscillatoria, Oedogonium, Enteromorpha, Padina, Turbinaria, Gracilaria.

FUNGI

Penicillium, Mucor, Xylaria, Polyporus, Agaricus

LICHENS

Any one foliose lichen, Usnea

BRYOPHYTES

Plagiochasma, Anthoceros, Polytrichum

RECORD

Algal collection trip and submission of 5 Herbaria

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2014
1-L1	General Characters of algae
2-L2	Similarities and Diversities of Algae
3- L3	Classification of Algae (F.G. Fritsch, V.J. Chapman, Parker)
4-L4	Classification of Algae
5-L5	Range of Thallus Structure
6-L6	Reproduction & Life Patterns of Algae
7-L7	Reproduction & Life Patterns of Algae
8-L8	life-history of Cyanophyceae
9-L9	life-history of Cyanophyceae
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Chlorophyceae
12-L11	Chlorophyceae
13-L12	Xanthophyceae
14-L13	Xanthophyceae
15-L14	Chrysophyceae
16-L15	Chrysophyceae
17-L16	Bacillariophyceae
18-L17	Bacillariophyceae
19-L18	Cryptophyceae
20-L19	Cryptophyceae
21-L20	Dinophyceae
22-L21	Dinophyceae
23-L22	Euglenophyceae - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Euglenophyceae
25-L24	Phaeophyceae
26-IT-1	**Internal Test-I**
27-L25	Phaeophyceae
28-L26	Rhodophyceae
29-L27	Rhodophyceae
30-L28	Physiology and Ecology of Algae - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal

31- L29	Origin & Evolution of Sex in Algae
32- L30	Fossil Algae
33- L31	Fossil Algae
34-P2	**College level meeting/Cell function**
35- L32	Economic Importance of Algae
36- L33	Laboratory culture and commercial cultivation of algae
37- L34	Algae as indicators of water pollution
38- L35	General characters of algae
39- L36	Classification of Fungi (Alexopoulous and Mims)
40- L37	Homothallism & Heterothallism in Fungi
41- L38	Parasexuality of Fungi
42- L39	Origin of Fungi, Mycorrihza
43- L40	Economic Importance of Fungi
44- L41	Over View of Zygomycetes
45- L42	Zygomycetes
46- L43	Ascomycetes
47- L44	Ascomycetes
48- L45	Basidiomycetes
49- L46	Detuteromycetes
50- L47	General characters of Lichens
51- P3	**Department Seminar**
52- L48	Classification Lichens
53- L49	Structure, Nutrition and Reproduction of Lichens
54- L50	Microchemical tests for Lichens
55- L51	Synthesis of Lichens
56-L52	Economic Importance of Lichens - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Ecological significance of Lichens
58-L54	Ecological significance of Lichens
59-IT-II	**Internal Test-II**
60- L55	General characters of Bryophytes including similarities & diversities
61- L56	General characters of Bryophytes including similarities & diversities
	Entering Internal Test-II Marks into University portal
62- L57	Classification of Bryophytes (G.M. Smith & Rothmaller)
63- L58	Classification of Bryophytes (G.M. Smith & Rothmaller)
64- L59	Reproduction in Bryophytes
65- L60	Reproduction in Bryophytes
66- L61	Life cycle pattern and alternation of generation
67- L62	Life cycle pattern and alternation of generation
68- L63	Life cycle pattern and alternation of generation
69- L64	Over view of Life History
70- L65	Over view of Life History
71- L66	Anthoceropsida
72- L67	Anthoceropsida
73- L68	Bryopsida
74-P4	**College level meeting/ function**
75- L69	Bryopsida
76- L70	Origin of Bryopsida

77- L71	Origin of Bryopsida
78- L72	Evolution of Bryophytes
79- L73	Evolution of Bryophytes - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Gametophytes and sporophytes in Bryophytes
81- L75	Gametophytes and sporophytes in Bryophytes
82-IT-III	**Internal Test-III**
83- L76	Gametophytes and sporophytes in Bryophytes
84- L77	Economic Importance of Bryophytes - **Test Paper distribution and result analysis**
85- L78	Economic Importance of Bryophytes
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Algae, Fungi, Lichens & Bryophytes >"
CO1	Gained knowledge about the general characteristic features of Algae,Fungi,Lichens and Bryophytes
CO2	Gained knowledge about the fossil forms of Algae and bryophytes
CO3	Learned about the Economic importance of lichen and bryophytes
CO4	Learned about the ecological significance of lichens .
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Algae and bryophytes, fungus prescribed in the syllabus.
EL2	Observation of microscopic forms of Algae prescribed in the syllabus
EL3	
EL4	
Integrated Activity	
IA1	Field trip to sea shore area
IA2	Preparation of Algal herbarium

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Mushroom Cultivation
Course Code	HBOE41
Class	II year (2014-2015)
Semester	Odd
Staff Name	Dr. Abragam Muthukumar, Dr. R. Selva kumara, Mrs. Kanimozhi Celina
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the Basic knowledge about Mushrooms their Morphology, Distribution & types.
- To know how to identify edible & poisonous mushrooms.
- To know the nutritional value of edible mushrooms.
- To know the medicinal values of mushrooms.
- To know about the methods & steps in cultivation of mushrooms.

Syllabus

MUSHROOM CULTIVATION

UNIT I

Introduction – history – Mushrooms – Morphology, distribution and types. Identification of edible and poisonous mushrooms – Nutritive values and Medicinal values.

UNIT II

Life cycle study of the species – *Pleurotus, Agaricus, Volvariella, Calocybe and Lactarius*, - breeding and genetic improvements of mushroom strains.

UNIT III

Cultivation – Conditions for tropical countries, isolation, spawn production, growth media, spawn running and harvesting. Factors affecting cultivation of mushrooms.

UNIT IV

Diseases and post – harvest technology – Insect pests, nematodes, mites, Viruses, fungal competitors and other important diseases, Post-harvest technology – harvesting, freeze drying, blanching, steeping, canning, pickling, and packaging.

UNIT V

Short term and long term storage, marketing – recipes from mushrooms. Common Indian mushrooms – distribution, production level, economic return, foreign exchange from mushroom cultivation countries and International trade. Prospects scope of mushroom cultivation in small scale Industries.

NOTE

Training in Mushroom cultivation can be given. Nutritional value can be determined. Visit to places of mushroom cultivation can be arranged.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	Introduction of Mushroom Cultivation
2-L2	Introduction of Mushroom Cultivation
3- L3	History of Mushroom Cultivation
4-L4	History of Mushroom Cultivation
5-L5	Mushrooms – Morphology, distribution and types
6-L6	Mushrooms – Morphology, distribution and types
7-L7	Mushrooms – Morphology, distribution and types
8-L8	Identification of edible and poisonous mushrooms
9-L9	Identification of edible and poisonous mushrooms
10-P1	**Welcoming of First year and Inauguration of Mathematics Association**
11-L10	Identification of edible and poisonous mushrooms
12-L11	Nutritive values
13-L12	Medicinal values
14-L13	Medicinal values
15-L14	*Pleurotus* - Life cycle study
16-L15	*Pleurotus* - Life cycle study
17-L16	*Agaricus,*
18-L17	*Agaricus,*
19-L18	*Volvariella*

20-L19	*Volvariella*
21-L20	*Calocybe*
22-L21	*Calocybe*
23-L22	*Lactarius* - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Lactarius*
25-L24	Breeding and genetic improvements of mushroom strains
26-IT-1	**Internal Test-I**
27-L25	Breeding and genetic improvements of mushroom strains
28-L26	Cultivation – Conditions for tropical countries
29-L27	Cultivation – Conditions for tropical countries
30-L28	Isolation of Mushroom Cultivation - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Isolation of Mushroom Cultivation
32- L30	Spawn production of Mushroom Cultivation
33- L31	Spawn production of Mushroom Cultivation
34-P2	**College level meeting/Cell function**
35- L32	Growth media
36- L33	spawn running and harvesting
37- L34	Factors affecting cultivation of mushrooms.
38- L35	Factors affecting cultivation of mushrooms.
39- L36	Diseases and post – harvest technology – Insect pests
40- L37	Diseases and post – harvest technology – Insect pests
41- L38	Nematodes
42- L39	Mites
43- L40	Mites
44- L41	Viruses
45- L42	Viruses
46- L43	Fungal competitors
47- L44	Fungal competitors and other important diseases
48- L45	Post-harvest technology
49- L46	Post-harvest technology - Harvesting
50- L47	freeze drying
51- P3	**Department Seminar**
52- L48	freeze drying
53- L49	blanching
54- L50	blanching
55- L51	steeping
56-L52	steeping - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	canning
58-L54	canning
59-IT-II	**Internal Test-II**
60- L55	pickling
61- L56	pickling - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	packaging

63- L58	Short term and long term storage
64- L59	Short term and long term storage
65- L60	Marketing
66- L61	Marketing
67- L62	Marketing
68- L63	Recipes from mushrooms.
69- L64	Recipes from mushrooms.
70- L65	Recipes from mushrooms.
71- L66	Common Indian mushrooms – distribution
72- L67	Common Indian mushrooms – distribution
73- L68	Common Indian mushrooms – distribution
74-P4	**College level meeting/ function**
75- L69	Production level
76- L70	Production level
77- L71	Economic return
78- L72	Economic return
79- L73	Foreign exchange from mushroom cultivation countries and International trade - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Foreign exchange from mushroom cultivation countries and International trade
81- L75	Prospects scope of mushroom cultivation in small scale Industries
82-IT-III	**Internal Test-III**
83- L76	Prospects scope of mushroom cultivation in small scale Industries
84- L77	scope of mushroom cultivation in small scale Industries - **Test Paper distribution and result analysis**
85- L78	scope of mushroom cultivation in small scale Industries
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	**COs** of the course "<Mushroom Cultivation >"
CO1	General Knowledge about poisonous & edible mushrooms.
CO2	Medicinal & Nutritional values of mushrooms.
CO3	Different methods of cultivation of mushrooms
CO4	
CO5	
CO6	
CO7	

CO8	
CO9	
Experimental Learning	
EL1	
EL2	
EL3	
EL4	
Integrated Activity	
IA1	Training in Mushroom Cultivation
IA2	Visit to places of mushroom cultivation
IA3	Nutritive & Medicinal values identified.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	HBOM21
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the characters & distribution of Pteridophytes & Gymnosperms.
- To know about the life cycle patterns of Pteridophytes.
- To impart knowledge on fossil forms of Pteridophytes of different era.
- To know about the life cycle patterns of different groups of Pteridophytes & Gymnosperms prescribed in the syllabus.

Syllabus

CORE PAPER 4

PLANT DIVERSITY – II

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY

UNIT I

General characteristics – Classification of Pteridophytes by Smith and K.R. Sporne – Stelar evolution – Telome theory – concept and significance – life cycle patterns – Apomictic life cycle.

UNIT II

Eusporangiate and leptosporangiate development – spore forming structures, soral evolution in ferns – Heterospory and Origin of seed habit. General account of fossil Pteridophytes – Geological era and study of the following fossil forms – *Rhynia, Lepdodendron, Sphenophyllum* and *Calamites.*

UNIT III

Range of structure, reproduction and evolution of gametophytes and sporophytes of the orders *Psilotales, Lycopodiale, Selaginellales, Isoetales, Equisetales, Ophioglossales, Osmundales, Filicales and Salviniales*. Economic importance of Pteridophytes.

UNIT IV

General characters, Affinities and evolution of Gymnosperms. Classification by Chamberlain and Sporne. Distribution of living and fossil gymnosperms in India, Economic Importance.

UNIT V

Morphology, Anatomy, reproduction, phylogeny and inter – relationships of the orders – cycadales, Ginkgoales, Coniferales and Gnetales. Study of the following fossil forms – Lyginopteris, Heterangium, Medullosa, Cycadeoidea, Pentaxylon, Cordaites.

PRACTICALS

PTERIDOPHYTES

Rhynia, Lepidodendron, Sphenophyllum, Calamites.

Isoetes, Equisetum, Ophioglossum, Angiopteris, Lygodium, Gleichenia.

Pteris, Adiantum Salvinia / Azolla.

GYMNOSPERMS

Lyginopteris, Heterangium, Cordaites, Medullosa, Cupressus, Podocarpus, Araucaria, Ephedra / Gnetum.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	General characteristic features of Pteridophytes
2-L2	Classification of Pteridophytes by Smith and K.R. Sporne
3- L3	Classification of Pteridophytes by Smith and K.R. Sporne
4-L4	Stelar evolution in Pteridophytes
5-L5	Stelar evolution in Pteridophytes
6-L6	Telome theory concept and significance
7-L7	Telome theory concept and significance
8-L8	Life cycle patterns

9-L9	Apomictic life cycle
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Development of Eusporangiate and leptosporangiate
12-L11	Development of Eusporangiate and leptosporangiate
13-L12	Spore forming structures
14-L13	Soral evolution in ferns
15-L14	Heterospory and Origin of seed habit
16-L15	Heterospory and Origin of seed habit
17-L16	General account of fossil Pteridophytes
18-L17	*Rhynia* – Structure, Reproduction, & Evolution
19-L18	*Rhynia* – Structure, Reproduction, & Evolution
20-L19	*Lepdodendron* – Structure, Reproduction, & Evolution
21-L20	*Lepdodendron* – Structure, Reproduction, & Evolution
22-L21	*Sphenophyllum* – Structure, Reproduction, & Evolution
23-L22	*Sphenophyllum* – Structure, Reproduction, & Evolution - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Calamites* – Structure, Reproduction, & Evolution
25-L24	*Calamites* – Structure, Reproduction, & Evolution
26-IT-1	**Internal Test-I**
27-L25	*Psilotales* – Structure, Reproduction, & Evolution
28-L26	*Psilotales* – Structure, Reproduction, & Evolution
29-L27	*Lycopodiales* – Structure, Reproduction, & Evolution
30-L28	*Lycopodiales* – Structure, Reproduction, & Evolution - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	*Lycopodiales* – Structure, Reproduction, & Evolution
32- L30	*Selaginellales* – Structure, Reproduction, & Evolution
33- L31	*Selaginellales* – Structure, Reproduction, & Evolution
34-P2	**College level meeting/Cell function**
35- L32	*Isoetales* – Structure, Reproduction, & Evolution
36- L33	*Isoetales* – Structure, Reproduction, & Evolution
37- L34	*Equisetales* – Structure, Reproduction, & Evolution
38- L35	*Equisetales* – Structure, Reproduction, & Evolution
39- L36	*Equisetales* – Structure, Reproduction, & Evolution
40- L37	*Ophioglossales* – Structure, Reproduction, & Evolution
41- L38	*Ophioglossales* – Structure, Reproduction, & Evolution
42- L39	*Osmundales* – Structure, Reproduction, & Evolution
43- L40	*Osmundales* – Structure, Reproduction, & Evolution
44- L41	*Osmundales* – Structure, Reproduction, & Evolution
45- L42	*Filicales* – Structure, Reproduction, & Evolution
46- L43	*Filicales* – Structure, Reproduction, & Evolution
47- L44	*Filicales* – Structure, Reproduction, & Evolution
48- L45	*Salviniales* – Structure, Reproduction, & Evolution
49- L46	*Salviniales* – Structure, Reproduction, & Evolution
50- L47	*Salviniales* – Structure, Reproduction, & Evolution
51- P3	**Department Seminar**
52- L48	Economic Importance of Pteridophytes

53- L49	Economic Importance of Pteridophytes
54- L50	General characters, Affinities and evolution of Gymnosperms
55- L51	General characters, Affinities and evolution of Gymnosperms
56-L52	Classification by Chamberlain and Sporne - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Classification by Chamberlain and Sporne
58-L54	Classification by Chamberlain and Sporne
59-IT-II	**Internal Test-II**
60- L55	Distribution of living and fossil gymnosperms in India
61- L56	Distribution of living and fossil gymnosperms in India - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
63- L58	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
64- L59	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
65- L60	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
66- L61	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
67- L62	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
68- L63	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
69- L64	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
70- L65	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
71- L66	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
72- L67	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
73- L68	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
74-P4	**College level meeting/ function**
75- L69	Study of fossils - Lyginopteris
76- L70	Lyginopteris
77- L71	Heterangium
78- L72	Heterangium
79- L73	Medullosa - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Medullosa
81- L75	Cycadeoidea
82-IT-III	**Internal Test-III**
83- L76	Cycadeoidea
84- L77	Pentaxylon - **Test Paper distribution and result analysis**
85- L78	Cordaites
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	COs of the course "<Pteridophytes, Gymnosperms and Paleobotany >"
CO1	Gained knowledge about the characters of Pteridiphytes & Gymnosperms.
CO2	Learned about the fossil forms of Pteridiphytes & Gymnosperms.
CO3	Learned about the economic importance & both pteridophytes & Gymnosperms.
CO4	
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Pteridophyte & Gymnosperms prescribed in the syllabus.
EL2	Preparation of permanent slides.
EL3	
EL4	
Integrated Activity	
IA1	Field trip to Manjolai, Kodaiyar, & Kudiraivetti.
IA2	Preparation of double stained permanent slide.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Taxonomy of Angiosperms
Course Code	HBOM31
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari & Dr. TJS. Rajakumar
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- General account on taxonomy flora, monographs & reviews. And also about the list of books, journals in Taxonomy.
- General account on plant morphology.
- To learn about identification, nomenclature & classification of plants.
- To learn about key preparation.
- To learn about the rules & regulations of ICBN.
- To know about effective & valid publication.
- To know about the molecular systematics.
- To know about the economic importance of plants in day to day life.

Syllabus

TAXONOMY OF ANGIOSPERMS

UNIT I

Aim and scope of Taxonomy. The Concept of genus – Species concept – Taxonomic hierarchy. Taxonomic literature – check list, Manuals, Monographs, Periodicals, Data Banks, Revision.

UNIT II

Botanical Nomenclature – ICBN – Principles and role of ICBN – Typification, Principles of Priority and their limitations – Citation, Effective and Valid Publications – Rules of naming taxa (family, genus, species).

UNIT III

Identification and preparation of intended and bracketed keys – Systems of classification – Artificial – Linneaus – Natural system – Bentham & Hooker – Phylogenetic – Engler & Prantle and Takhajan. Herbarium Preparation – Methods – Regional, National and International Herbaria and their potential role.

UNIT IV

Taxonomy in relation to Cytology, Anatomy, Embryology and Phytochemistry. Role of Botanical Survay of India (BSI), Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar.

UNIT V

A detailed study with special reference to the following families,

Cleomaceae, Menispermaceae, Tiliaceae, Zygophyllaceae, Vitaceae, Sapindaceae, Mimosaceae, Onagraceae, Passifloraceae, Molluginaceae, Apiaceae, Asteraceae, Asclepiadaceae, Convolvulaceae, Bignoniaceae, Acanthaceae, Verbenaceae, Nyctaginaceae, Amaranthaceae, Euphorbiaceae, Liliaceae, Commelinaceae and Poaceae.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2014
1-L1	Aim and scope of Taxonomy
2-L2	The Concept of genus
3- L3	Species concept & Taxonomic hierarchy
4-L4	Taxonomic literature – check list, Manuals
5-L5	Monographs, Periodicals
6-L6	Data Banks, Revision
7-L7	Botanical Nomenclature
8-L8	Botanical Nomenclature
9-L9	Principles and role of ICBN
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Typification, Principles of Priority and their limitations
12-L11	Typification, Principles of Priority and their limitations
13-L12	Citation, Effective and Valid Publications
14-L13	Citation, Effective and Valid Publications
15-L14	Rules of naming taxa (family, genus, species)
16-L15	Identification and preparation of Keys
17-L16	Intended keys
18-L17	Bracketed keys

19-L18	System of classification
20-L19	Artificial – Linneaus
21-L20	Artificial – Linneaus
22-L21	Natural system of classification – Bentham & Hooker
23-L22	Natural system of classification – Bentham & Hooker - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Phylogenetic – Engler & Prantle and Takhajan
25-L24	Phylogenetic – Engler & Prantle and Takhajan
26-IT-1	**Internal Test-I**
27-L25	Preparation of Herbarium – Methods – Regional
28-L26	National and International Herbaria and their potential role.
29-L27	National and International Herbaria and their potential role.
30-L28	Taxonomy in relation to Cytology - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Taxonomy in relation to Cytology
32- L30	Anatomy
33- L31	Embryology
34-P2	**College level meeting/Cell function**
35- L32	Phytochemistry
36- L33	Role of Botanical Survay of India (BSI)
37- L34	Role of Botanical Survay of India (BSI)
38- L35	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
39- L36	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
40- L37	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
41- L38	Cleomaceae
42- L39	Cleomaceae
43- L40	Menispermaceae
44- L41	Menispermaceae
45- L42	Tiliaceae
46- L43	Tiliaceae
47- L44	Zygophyllaceae
48- L45	Zygophyllaceae
49- L46	Vitaceae,
50- L47	Vitaceae,
51- P3	**Department Seminar**
52- L48	Sapindaceae
53- L49	Sapindaceae
54- L50	Mimosaceae
55- L51	Mimosaceae
56-L52	Onagraceae - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Onagraceae
58-L54	Passifloraceae
59-IT-II	**Internal Test-II**
60- L55	Passifloraceae
61- L56	Molluginaceae - **Test Paper distribution and result analysis**

	Entering Internal Test-II Marks into University portal
62- L57	Molluginaceae
63- L58	Apiaceae
64- L59	Apiaceae
65- L60	Asteraceae
66- L61	Asteraceae
67- L62	Asclepiadaceae
68- L63	Asclepiadaceae
69- L64	Convolvulaceae
70- L65	Convolvulaceae
71- L66	Bignoniaceae
72- L67	Bignoniaceae
73- L68	Acanthaceae
74-P4	**College level meeting/ function**
75- L69	Acanthaceae
76- L70	Verbenaceae
77- L71	Nyctaginaceae
78- L72	Amaranthaceae
79- L73	Amaranthaceae - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Euphorbiaceae
81- L75	Euphorbiaceae
82-IT-III	**Internal Test-III**
83- L76	Liliaceae
84- L77	Commelinaceae - **Test Paper distribution and result analysis**
85- L78	Poaceae
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Taxonomy of Angiosperms >"
CO1	Gained knowledge about identification of plant species.
CO2	Learned key preparation.
CO3	Learned to identify binomial using flora of presidency Madras.
CO4	Learned to prepare Herbarium.
CO5	Learned to write field note.
CO6	Learned about RFLP & ISSR.
CO7	Learned about DNA Bar Coding.
CO8	Learned about the Economic important plants.
CO9	

Experimental Learning	
EL1	Floral dissection & technical describtion of plants.
EL2	Identification of plants.
EL3	Identification of Bionmial.
EL4	Preparation of herbarium & field note.
EL5	Identification of Economically important plants & their uses.
Integrated Activity	
IA1	Study tour of Taxonomic interest.
IA2	Collection of Plants.
IA3	Herbarium preparation & field notebook.
IA4	Preparation of photo album of plants prescribed in the syllabus.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Medicinal Botany & Dietetics
Course Code	KBOE41
Class	II year (2017-2018)
Semester	Even
Staff Name	Dr. R. Selva Kumari & Prof. Mrs. Kanimozhi Celina
Credits	3
L. Hours /P. Hours	3 / WK
Total 45Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 35 Hrs (5 units; 5×7=35; 07Hrs /unit)	

Course Objectives

- To know the basic knowledge on medicinal plants & its applications.
- To promote good health through diet & nutrition.
- To educate the science of nutrition in preventing development of disease.
- To educate on the nutritional standards & specifications for the healthy persons & patients.
- To impart knowledge on the therapeutic value of plant foods.

Syllabus

Medicinal Botany and Dietetics

Medicinal Botany:-

Unit –I

Study of the following plants with reference to their Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root), *Acorus calamus* (Rhizome), *Tylophora asthmatica* (leaf), *Terminalia chebula* (fruit), *Plantago ovata* (seed) and *Holarrhena antidysenterica* (bark).

Unit - II

Source, properties and medicinal uses of some phyto oils resources -Olive oil, Castor oil, Neem oil, Mentha oil and Lavender oil.

Unit - III

Dietetics- Therapeutic value of Indian plant foods- a) rice b) wheat; c) green gram, black gram, soya bean d) lemon, banana, Guava, e) Ginger, Turmeric, Coriander, Garlic, Cumin and Clove.

Unit – IV

Plant nutraceuticals- definition and sources. Study of plant foods (food as medicine) in the treatment of some selected diseases – anorexia, arthritis, constipation, diarrhoea, diabetes, psoriasis, hypertension and memory loss.

Unit- V

Plant foods as Antioxidants - Definition - types, PUFA, Probiotics, Prebiotics, Dietary fibers, Omega-3 fatty acids. Cosmeceuticals – Definition, Retinoic acid.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 07.12.2017
1-L1	Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root)
2-L2	*Acorus calamus* (Rhizome) continuation
3- L3	*Acorus calamus* (Rhizome)
4-L4	*Tylophora asthmatica* (leaf)
5 - P1	**Welcoming of First year and Inauguration of Botany Association**
6-L5	*Terminalia chebula* (fruit)
7-L6	*Plantago ovata* (seed) continuation
8-L7	*Holarrhena antidysenterica* (bark).
9- L8	Source, properties and medicinal uses of phyto oils – Olive oil - **Allotting portion for Internal Test-I**
	Internal Test I begins
10- L9	Olive oil continuation
11-IT-1	**Internal Test-I**
12-L10	Castor oil source & uses
13-L11	Castor oil properties - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
14-L12	Neem oil – Uses
15-L13	Neem oil - source & properties
16- P2	**College level meeting/Cell function**
17-L14	Mentha oil - properties

18-L15	Mentha oil – Medicinal uses
19-L16	Lavender oil – source & properties
20-L17	Lavender oil – Medicinal uses - **Allotting portion for Internal Test-II**
	Internal Test II begins
21- L18	Therapeutic values - Rice
22- IT-II	**Internal Test-II**
23-L19	Wheat - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
24-L20	Green gram
25- P3	**Department Seminar**
26-L21	Black gram
27-L22	Soya bean, Lemon
28-L23	Banana, Guava
29- P4	**College level meeting/ function**
30-L24	Ginger & Turmeric
31-L25	Coriander & Garlic
32-L26	Cumin and Clove - **Allotting portion for Internal Test-III**
	Internal Test III begins
33-L27	Plant food used in the treatment of Anorexia, Arthritis
34-IT-III	**Internal Test-III**
35-L28	Constipation, Diarrhoea, Diabetes
36-L29	Psoriasis, Hypertension And Memory Loss
37- L30	Plant foods as Antioxidants
38-L31	PUFA, Probiotics, Prebiotics
39-L32	Dietary fibers, Omega-3 fatty acids
40-L33	Cosmeceuticals – Definition, Retinoic acid - **Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
41- MT	**Model Test**
42-MT	**Model Test**
43-MT	**Model Test**
44- L34	**Model test paper distribution and previous year university question paper discussion**
45-L35	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04. 2018

Course Outcomes

Learning Outcomes	**COs** of the course "< **Medicinal Botany and Dietetics** >"
CO1	Gained knowledge about nutritive diet for different age groups.
CO2	Acquired knowledge about healthy food for normal person & patient.
CO3	Acquire knowledge in Dietetics to prevent mortality due to mal nourishment.
CO4	
CO5	
CO6	

CO7	
CO8	
CO9	
Experimental Learning	
EL1	Identification of Medicinal plants
EL2	Identification of plant foods as medicine.
EL3	Identification of plant foods as Antioxidants.
EL4	Extraction of volatile oil from medicinal palnts.
Integrated Activity	
IA1	Visit to Medicinal Garden.
IA2	Identification of medicinal plants & their uses.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Algae, Fungi, Lichens & Bryophytes
Course Code	HBOM11
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the classification and distribution of algae.
- To know about the structure and reproduction and life cycle of patherns of algae.
- To know abort origin and evolution of algae.
- To know about the economic impact of algae.
- To know the basic knowledge about general characteristic features of fungi.
- To know about the classification of fungi.
- To know about the economic importance of fungi.
- To impart knowledge on 4chens of their ecological significance.
- To know about the general characters of Bryophytes.
- To impart knowledge on the life cycle pattern of different classes of Bryophytes

Syllabus

Algae, Fungi, Lichens And Bryophytes

UNIT – I

General characters of algae including similarities and diversities. Classification of algae proposed by F.G. Fritsch, V.J. Chapman and Parker – Basis of algal classification.

Distribution – range of thallus structure – Reproduction and life cycle patterns of algae – Cyanophyceae, Chlorophyceae, Xanthophyceae, Chrysophyceae, Bacillariophyceae, Cryptophyceae, Dinophyceae, Euglenophyceae, Phaeophyceae and Rhodophyceae.

UNIT –II

Physiology and Ecology of algae. Origin and evolution of sex in algae. Fossil algae – economic importance of algae – laboratory culture and commercial cultivation of algae. Algae as indicators of water pollution.

UNIT III

General charcters of fungi. Classification of fungi proposed by Alexopoulous and Mims. Homothallism and Heterothallism in fungi – Parasexuality in fungi – Origin of fungi – Mycorrihiza. Economic importance of fungi. An over view of Zygomycetes, Basidiomycetes and Deuteromycetes including life history.

UNIT IV

A general account of lichens – classification – structure – nutrition and reproduction of lichens – Microchemical tests for lichens – Synthesis of lichens. Economic importance of lichens – Ecological significance of lichens.

UNIT V

General characters of Bryophytes including similarities and diversities. Classification of Bryophytes proposed by G.M. Smith and Rothmaller. Reproduction in Bryophytes. General life cycle pattern and alternation of generation in bryophytes. An Over view of Hepaticopsida, Anthoceropsida and Bryopsida including life history – Origin of bryophytes. Evolution of gametophytes and sporophytes in bryophytes – Economic importance of bryophytes.

PRACTICALS

ALGAE

Anabaena, Oscillatoria, Oedogonium, Enteromorpha, Padina, Turbinaria, Gracilaria.

FUNGI

Penicillium, Mucor, Xylaria, Polyporus, Agaricus

LICHENS

Any one foliose lichen, Usnea

BRYOPHYTES

Plagiochasma, Anthoceros, Polytrichum

RECORD

Algal collection trip and submission of 5 Herbaria

Course Calendar

Hour allotment	Class Schedule
	Odd Semester Begin on 18.06.2014
1-L1	General Characters of algae
2-L2	Similarities and Diversities of Algae
3- L3	Classification of Algae (F.G. Fritsch, V.J. Chapman, Parker)
4-L4	Classification of Algae
5-L5	Range of Thallus Structure
6-L6	Reproduction & Life Patterns of Algae
7-L7	Reproduction & Life Patterns of Algae
8-L8	life-history of Cyanophyceae
9-L9	life-history of Cyanophyceae
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Chlorophyceae
12-L11	Chlorophyceae
13-L12	Xanthophyceae
14-L13	Xanthophyceae
15-L14	Chrysophyceae
16-L15	Chrysophyceae
17-L16	Bacillariophyceae
18-L17	Bacillariophyceae
19-L18	Cryptophyceae
20-L19	Cryptophyceae
21-L20	Dinophyceae
22-L21	Dinophyceae
23-L22	Euglenophyceae - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Euglenophyceae
25-L24	Phaeophyceae
26-IT-1	**Internal Test-I**
27-L25	Phaeophyceae
28-L26	Rhodophyceae
29-L27	Rhodophyceae
30-L28	Physiology and Ecology of Algae - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal

31- L29	Origin & Evolution of Sex in Algae
32- L30	Fossil Algae
33- L31	Fossil Algae
34-P2	**College level meeting/Cell function**
35- L32	Economic Importance of Algae
36- L33	Laboratory culture and commercial cultivation of algae
37- L34	Algae as indicators of water pollution
38- L35	General characters of algae
39- L36	Classification of Fungi (Alexopoulous and Mims)
40- L37	Homothallism & Heterothallism in Fungi
41- L38	Parasexuality of Fungi
42- L39	Origin of Fungi, Mycorrihza
43- L40	Economic Importance of Fungi
44- L41	Over View of Zygomycetes
45- L42	Zygomycetes
46- L43	Ascomycetes
47- L44	Ascomycetes
48- L45	Basidiomycetes
49- L46	Detuteromycetes
50- L47	General characters of Lichens
51- P3	**Department Seminar**
52- L48	Classification Lichens
53- L49	Structure, Nutrition and Reproduction of Lichens
54- L50	Microchemical tests for Lichens
55- L51	Synthesis of Lichens
56-L52	Economic Importance of Lichens - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Ecological significance of Lichens
58-L54	Ecological significance of Lichens
59-IT-II	**Internal Test-II**
60- L55	General characters of Bryophytes including similarities & diversities
61- L56	General characters of Bryophytes including similarities & diversities
	Entering Internal Test-II Marks into University portal
62- L57	Classification of Bryophytes (G.M. Smith & Rothmaller)
63- L58	Classification of Bryophytes (G.M. Smith & Rothmaller)
64- L59	Reproduction in Bryophytes
65- L60	Reproduction in Bryophytes
66- L61	Life cycle pattern and alternation of generation
67- L62	Life cycle pattern and alternation of generation
68- L63	Life cycle pattern and alternation of generation
69- L64	Over view of Life History
70- L65	Over view of Life History
71- L66	Anthoceropsida
72- L67	Anthoceropsida
73- L68	Bryopsida
74-P4	**College level meeting/ function**
75- L69	Bryopsida
76- L70	Origin of Bryopsida

77- L71	Origin of Bryopsida
78- L72	Evolution of Bryophytes
79- L73	Evolution of Bryophytes - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Gametophytes and sporophytes in Bryophytes
81- L75	Gametophytes and sporophytes in Bryophytes
82-IT-III	**Internal Test-III**
83- L76	Gametophytes and sporophytes in Bryophytes
84- L77	Economic Importance of Bryophytes - **Test Paper distribution and result analysis**
85- L78	Economic Importance of Bryophytes
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Algae, Fungi, Lichens & Bryophytes >"
CO1	Gained knowledge about the general characteristic features of Algae,Fungi,Lichens and Bryophytes
CO2	Gained knowledge about the fossil forms of Algae and bryophytes
CO3	Learned about the Economic importance of lichen and bryophytes
CO4	Learned about the ecological significance of lichens .
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Algae and bryophytes, fungus prescribed in the syllabus.
EL2	Observation of microscopic forms of Algae prescribed in the syllabus
EL3	
EL4	
Integrated Activity	
IA1	Field trip to sea shore area
IA2	Preparation of Algal herbarium

# Blended Learning	: using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,
# For Advanced Learner	: use library books, E- books, motivate student to prepare for higher study.
# For slow learner	: special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.
# Extension activity	: Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Mushroom Cultivation
Course Code	HBOE41
Class	II year (2014-2015)
Semester	Odd
Staff Name	Dr. Abragam Muthukumar, Dr. R. Selva kumara, Mrs. Kanimozhi Celina
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the Basic knowledge about Mushrooms their Morphology, Distribution & types.
- To know how to identify edible & poisonous mushrooms.
- To know the nutritional value of edible mushrooms.
- To know the medicinal values of mushrooms.
- To know about the methods & steps in cultivation of mushrooms.

Syllabus

MUSHROOM CULTIVATION

UNIT I

Introduction – history – Mushrooms – Morphology, distribution and types. Identification of edible and poisonous mushrooms – Nutritive values and Medicinal values.

UNIT II

Life cycle study of the species – *Pleurotus, Agaricus, Volvariella, Calocybe and Lactarius*, - breeding and genetic improvements of mushroom strains.

UNIT III

Cultivation – Conditions for tropical countries, isolation, spawn production, growth media, spawn running and harvesting. Factors affecting cultivation of mushrooms.

UNIT IV

Diseases and post – harvest technology – Insect pests, nematodes, mites, Viruses, fungal competitors and other important diseases, Post-harvest technology – harvesting, freeze drying, blanching, steeping, canning, pickling, and packaging.

UNIT V

Short term and long term storage, marketing – recipes from mushrooms. Common Indian mushrooms – distribution, production level, economic return, foreign exchange from mushroom cultivation countries and International trade. Prospects scope of mushroom cultivation in small scale Industries.

NOTE

Training in Mushroom cultivation can be given. Nutritional value can be determined. Visit to places of mushroom cultivation can be arranged.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	Introduction of Mushroom Cultivation
2-L2	Introduction of Mushroom Cultivation
3- L3	History of Mushroom Cultivation
4-L4	History of Mushroom Cultivation
5-L5	Mushrooms – Morphology, distribution and types
6-L6	Mushrooms – Morphology, distribution and types
7-L7	Mushrooms – Morphology, distribution and types
8-L8	Identification of edible and poisonous mushrooms
9-L9	Identification of edible and poisonous mushrooms
10-P1	**Welcoming of First year and Inauguration of Mathematics Association**
11-L10	Identification of edible and poisonous mushrooms
12-L11	Nutritive values
13-L12	Medicinal values
14-L13	Medicinal values
15-L14	*Pleurotus* - Life cycle study
16-L15	*Pleurotus* - Life cycle study
17-L16	*Agaricus,*
18-L17	*Agaricus,*
19-L18	*Volvariella*

20-L19	*Volvariella*
21-L20	*Calocybe*
22-L21	*Calocybe*
23-L22	*Lactarius* - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Lactarius*
25-L24	Breeding and genetic improvements of mushroom strains
26-IT-1	**Internal Test-I**
27-L25	Breeding and genetic improvements of mushroom strains
28-L26	Cultivation – Conditions for tropical countries
29-L27	Cultivation – Conditions for tropical countries
30-L28	Isolation of Mushroom Cultivation - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Isolation of Mushroom Cultivation
32- L30	Spawn production of Mushroom Cultivation
33- L31	Spawn production of Mushroom Cultivation
34-P2	**College level meeting/Cell function**
35- L32	Growth media
36- L33	spawn running and harvesting
37- L34	Factors affecting cultivation of mushrooms.
38- L35	Factors affecting cultivation of mushrooms.
39- L36	Diseases and post – harvest technology – Insect pests
40- L37	Diseases and post – harvest technology – Insect pests
41- L38	Nematodes
42- L39	Mites
43- L40	Mites
44- L41	Viruses
45- L42	Viruses
46- L43	Fungal competitors
47- L44	Fungal competitors and other important diseases
48- L45	Post-harvest technology
49- L46	Post-harvest technology - Harvesting
50- L47	freeze drying
51- P3	**Department Seminar**
52- L48	freeze drying
53- L49	blanching
54- L50	blanching
55- L51	steeping
56-L52	steeping - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	canning
58-L54	canning
59-IT-II	**Internal Test-II**
60- L55	pickling
61- L56	pickling - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	packaging

63- L58	Short term and long term storage
64- L59	Short term and long term storage
65- L60	Marketing
66- L61	Marketing
67- L62	Marketing
68- L63	Recipes from mushrooms.
69- L64	Recipes from mushrooms.
70- L65	Recipes from mushrooms.
71- L66	Common Indian mushrooms – distribution
72- L67	Common Indian mushrooms – distribution
73- L68	Common Indian mushrooms – distribution
74-P4	**College level meeting/ function**
75- L69	Production level
76- L70	Production level
77- L71	Economic return
78- L72	Economic return
79- L73	Foreign exchange from mushroom cultivation countries and International trade - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Foreign exchange from mushroom cultivation countries and International trade
81- L75	Prospects scope of mushroom cultivation in small scale Industries
82-IT-III	**Internal Test-III**
83- L76	Prospects scope of mushroom cultivation in small scale Industries
84- L77	scope of mushroom cultivation in small scale Industries - **Test Paper distribution and result analysis**
85- L78	scope of mushroom cultivation in small scale Industries
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	**COs** of the course "<Mushroom Cultivation >"
CO1	General Knowledge about poisonous & edible mushrooms.
CO2	Medicinal & Nutritional values of mushrooms.
CO3	Different methods of cultivation of mushrooms
CO4	
CO5	
CO6	
CO7	

CO8	
CO9	
Experimental Learning	
EL1	
EL2	
EL3	
EL4	
Integrated Activity	
IA1	Training in Mushroom Cultivation
IA2	Visit to places of mushroom cultivation
IA3	Nutritive & Medicinal values identified.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Pteridophytes, Gymnosperms and Paleobotany
Course Code	HBOM21
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- To know the basic knowledge about the characters & distribution of Pteridophytes & Gymnosperms.
- To know about the life cycle patterns of Pteridophytes.
- To impart knowledge on fossil forms of Pteridophytes of different era.
- To know about the life cycle patterns of different groups of Pteridophytes & Gymnosperms prescribed in the syllabus.

Syllabus

CORE PAPER 4

PLANT DIVERSITY – II

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY

UNIT I

General characteristics – Classification of Pteridophytes by Smith and K.R. Sporne – Stelar evolution – Telome theory – concept and significance – life cycle patterns – Apomictic life cycle.

UNIT II

Eusporangiate and leptosporangiate development – spore forming structures, soral evolution in ferns – Heterospory and Origin of seed habit. General account of fossil Pteridophytes – Geological era and study of the following fossil forms – *Rhynia, Lepdodendron, Sphenophyllum* and *Calamites.*

UNIT III

Range of structure, reproduction and evolution of gametophytes and sporophytes of the orders *Psilotales, Lycopodiale, Selaginellales, Isoetales, Equisetales, Ophioglossales, Osmundales, Filicales and Salviniales*. Economic importance of Pteridophytes.

UNIT IV

General characters, Affinities and evolution of Gymnosperms. Classification by Chamberlain and Sporne. Distribution of living and fossil gymnosperms in India, Economic Importance.

UNIT V

Morphology, Anatomy, reproduction, phylogeny and inter – relationships of the orders – cycadales, Ginkgoales, Coniferales and Gnetales. Study of the following fossil forms – Lyginopteris, Heterangium, Medullosa, Cycadeoidea, Pentaxylon, Cordaites.

PRACTICALS

PTERIDOPHYTES

Rhynia, Lepidodendron, Sphenophyllum, Calamites.

Isoetes, Equisetum, Ophioglossum, Angiopteris, Lygodium, Gleichenia.

Pteris, Adiantum Salvinia / Azolla.

GYMNOSPERMS

Lyginopteris, Heterangium, Cordaites, Medullosa, Cupressus, Podocarpus, Araucaria, Ephedra / Gnetum.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 03.12.2014
1-L1	General characteristic features of Pteridophytes
2-L2	Classification of Pteridophytes by Smith and K.R. Sporne
3- L3	Classification of Pteridophytes by Smith and K.R. Sporne
4-L4	Stelar evolution in Pteridophytes
5-L5	Stelar evolution in Pteridophytes
6-L6	Telome theory concept and significance
7-L7	Telome theory concept and significance
8-L8	Life cycle patterns

9-L9	Apomictic life cycle
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Development of Eusporangiate and leptosporangiate
12-L11	Development of Eusporangiate and leptosporangiate
13-L12	Spore forming structures
14-L13	Soral evolution in ferns
15-L14	Heterospory and Origin of seed habit
16-L15	Heterospory and Origin of seed habit
17-L16	General account of fossil Pteridophytes
18-L17	*Rhynia* – Structure, Reproduction, & Evolution
19-L18	*Rhynia* – Structure, Reproduction, & Evolution
20-L19	*Lepdodendron* – Structure, Reproduction, & Evolution
21-L20	*Lepdodendron* – Structure, Reproduction, & Evolution
22-L21	*Sphenophyllum* – Structure, Reproduction, & Evolution
23-L22	*Sphenophyllum* – Structure, Reproduction, & Evolution - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	*Calamites* – Structure, Reproduction, & Evolution
25-L24	*Calamites* – Structure, Reproduction, & Evolution
26-IT-1	**Internal Test-I**
27-L25	*Psilotales* – Structure, Reproduction, & Evolution
28-L26	*Psilotales* – Structure, Reproduction, & Evolution
29-L27	*Lycopodiales* – Structure, Reproduction, & Evolution
30-L28	*Lycopodiales* – Structure, Reproduction, & Evolution - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	*Lycopodiales* – Structure, Reproduction, & Evolution
32- L30	*Selaginellales* – Structure, Reproduction, & Evolution
33- L31	*Selaginellales* – Structure, Reproduction, & Evolution
34-P2	**College level meeting/Cell function**
35- L32	*Isoetales* – Structure, Reproduction, & Evolution
36- L33	*Isoetales* – Structure, Reproduction, & Evolution
37- L34	*Equisetales* – Structure, Reproduction, & Evolution
38- L35	*Equisetales* – Structure, Reproduction, & Evolution
39- L36	*Equisetales* – Structure, Reproduction, & Evolution
40- L37	*Ophioglossales* – Structure, Reproduction, & Evolution
41- L38	*Ophioglossales* – Structure, Reproduction, & Evolution
42- L39	*Osmundales* – Structure, Reproduction, & Evolution
43- L40	*Osmundales* – Structure, Reproduction, & Evolution
44- L41	*Osmundales* – Structure, Reproduction, & Evolution
45- L42	*Filicales* – Structure, Reproduction, & Evolution
46- L43	*Filicales* – Structure, Reproduction, & Evolution
47- L44	*Filicales* – Structure, Reproduction, & Evolution
48- L45	*Salviniales* – Structure, Reproduction, & Evolution
49- L46	*Salviniales* – Structure, Reproduction, & Evolution
50- L47	*Salviniales* – Structure, Reproduction, & Evolution
51- P3	**Department Seminar**
52- L48	Economic Importance of Pteridophytes

53- L49	Economic Importance of Pteridophytes
54- L50	General characters, Affinities and evolution of Gymnosperms
55- L51	General characters, Affinities and evolution of Gymnosperms
56-L52	Classification by Chamberlain and Sporne - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Classification by Chamberlain and Sporne
58-L54	Classification by Chamberlain and Sporne
59-IT-II	**Internal Test-II**
60- L55	Distribution of living and fossil gymnosperms in India
61- L56	Distribution of living and fossil gymnosperms in India - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
62- L57	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
63- L58	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
64- L59	Cycadales – Morphology, Anatomy, Reproduction & Phylogeny
65- L60	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
66- L61	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
67- L62	Ginkgoales – Morphology, Anatomy, Reproduction & Phylogeny
68- L63	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
69- L64	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
70- L65	Coniferales – Morphology, Anatomy, Reproduction & Phylogeny
71- L66	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
72- L67	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
73- L68	Gnetales – Morphology, Anatomy, Reproduction & Phylogeny
74-P4	**College level meeting/ function**
75- L69	Study of fossils - Lyginopteris
76- L70	Lyginopteris
77- L71	Heterangium
78- L72	Heterangium
79- L73	Medullosa - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Medullosa
81- L75	Cycadeoidea
82-IT-III	**Internal Test-III**
83- L76	Cycadeoidea
84- L77	Pentaxylon - **Test Paper distribution and result analysis**
85- L78	Cordaites
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04.2015

Course Outcomes

Learning Outcomes	COs of the course "<Pteridophytes, Gymnosperms and Paleobotany >"
CO1	Gained knowledge about the characters of Pteridiphytes & Gymnosperms.
CO2	Learned about the fossil forms of Pteridiphytes & Gymnosperms.
CO3	Learned about the economic importance & both pteridophytes & Gymnosperms.
CO4	
CO5	
CO6	
CO7	
CO8	
CO9	
Experimental Learning	
EL1	Internal structure of Pteridophyte & Gymnosperms prescribed in the syllabus.
EL2	Preparation of permanent slides.
EL3	
EL4	
Integrated Activity	
IA1	Field trip to Manjolai, Kodaiyar, & Kudiraivetti.
IA2	Preparation of double stained permanent slide.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Taxonomy of Angiosperms
Course Code	HBOM31
Class	I year (2014-2015)
Semester	Odd
Staff Name	Dr. R. Selva Kumari & Dr. TJS. Rajakumar
Credits	6
L. Hours /P. Hours	6 / WK
Total 90 Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 80 Hrs (5 units; 5×16=80; 16Hrs /unit)	

Course Objectives

- General account on taxonomy flora, monographs & reviews. And also about the list of books, journals in Taxonomy.
- General account on plant morphology.
- To learn about identification, nomenclature & classification of plants.
- To learn about key preparation.
- To learn about the rules & regulations of ICBN.
- To know about effective & valid publication.
- To know about the molecular systematics.
- To know about the economic importance of plants in day to day life.

Syllabus

TAXONOMY OF ANGIOSPERMS

UNIT I

Aim and scope of Taxonomy. The Concept of genus – Species concept – Taxonomic hierarchy. Taxonomic literature – check list, Manuals, Monographs, Periodicals, Data Banks, Revision.

UNIT II

Botanical Nomenclature – ICBN – Principles and role of ICBN – Typification, Principles of Priority and their limitations – Citation, Effective and Valid Publications – Rules of naming taxa (family, genus, species).

UNIT III

Identification and preparation of intended and bracketed keys – Systems of classification – Artificial – Linneaus – Natural system – Bentham & Hooker – Phylogenetic – Engler & Prantle and Takhajan. Herbarium Preparation – Methods – Regional, National and International Herbaria and their potential role.

UNIT IV

Taxonomy in relation to Cytology, Anatomy, Embryology and Phytochemistry. Role of Botanical Survay of India (BSI), Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar.

UNIT V

A detailed study with special reference to the following families,

Cleomaceae, Menispermaceae, Tiliaceae, Zygophyllaceae, Vitaceae, Sapindaceae, Mimosaceae, Onagraceae, Passifloraceae, Molluginaceae, Apiaceae, Asteraceae, Asclepiadaceae, Convolvulaceae, Bignoniaceae, Acanthaceae, Verbenaceae, Nyctaginaceae, Amaranthaceae, Euphorbiaceae, Liliaceae, Commelinaceae and Poaceae.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 18.06.2014
1-L1	Aim and scope of Taxonomy
2-L2	The Concept of genus
3- L3	Species concept & Taxonomic hierarchy
4-L4	Taxonomic literature – check list, Manuals
5-L5	Monographs, Periodicals
6-L6	Data Banks, Revision
7-L7	Botanical Nomenclature
8-L8	Botanical Nomenclature
9-L9	Principles and role of ICBN
10-P1	**Welcoming of First year and Inauguration of Botany Association**
11-L10	Typification, Principles of Priority and their limitations
12-L11	Typification, Principles of Priority and their limitations
13-L12	Citation, Effective and Valid Publications
14-L13	Citation, Effective and Valid Publications
15-L14	Rules of naming taxa (family, genus, species)
16-L15	Identification and preparation of Keys
17-L16	Intended keys
18-L17	Bracketed keys

19-L18	System of classification
20-L19	Artificial – Linneaus
21-L20	Artificial – Linneaus
22-L21	Natural system of classification – Bentham & Hooker
23-L22	Natural system of classification – Bentham & Hooker - **Allotting portion for Internal Test-I**
	Internal Test I begins
24-L23	Phylogenetic – Engler & Prantle and Takhajan
25-L24	Phylogenetic – Engler & Prantle and Takhajan
26-IT-1	**Internal Test-I**
27-L25	Preparation of Herbarium – Methods – Regional
28-L26	National and International Herbaria and their potential role.
29-L27	National and International Herbaria and their potential role.
30-L28	Taxonomy in relation to Cytology - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
31- L29	Taxonomy in relation to Cytology
32- L30	Anatomy
33- L31	Embryology
34-P2	**College level meeting/Cell function**
35- L32	Phytochemistry
36- L33	Role of Botanical Survay of India (BSI)
37- L34	Role of Botanical Survay of India (BSI)
38- L35	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
39- L36	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
40- L37	Contributions of Linnaeus, De Candolle, J.D. Hooker and M.P. Nayar
41- L38	Cleomaceae
42- L39	Cleomaceae
43- L40	Menispermaceae
44- L41	Menispermaceae
45- L42	Tiliaceae
46- L43	Tiliaceae
47- L44	Zygophyllaceae
48- L45	Zygophyllaceae
49- L46	Vitaceae,
50- L47	Vitaceae,
51- P3	**Department Seminar**
52- L48	Sapindaceae
53- L49	Sapindaceae
54- L50	Mimosaceae
55- L51	Mimosaceae
56-L52	Onagraceae - **Allotting portion for Internal Test-II**
	Internal Test II begins
57-L53	Onagraceae
58-L54	Passifloraceae
59-IT-II	**Internal Test-II**
60- L55	Passifloraceae
61- L56	Molluginaceae - **Test Paper distribution and result analysis**

	Entering Internal Test-II Marks into University portal
62- L57	Molluginaceae
63- L58	Apiaceae
64- L59	Apiaceae
65- L60	Asteraceae
66- L61	Asteraceae
67- L62	Asclepiadaceae
68- L63	Asclepiadaceae
69- L64	Convolvulaceae
70- L65	Convolvulaceae
71- L66	Bignoniaceae
72- L67	Bignoniaceae
73- L68	Acanthaceae
74-P4	**College level meeting/ function**
75- L69	Acanthaceae
76- L70	Verbenaceae
77- L71	Nyctaginaceae
78- L72	Amaranthaceae
79- L73	Amaranthaceae - **Allotting portion for Internal Test-III**
	Internal Test III begins
80- L74	Euphorbiaceae
81- L75	Euphorbiaceae
82-IT-III	**Internal Test-III**
83- L76	Liliaceae
84- L77	Commelinaceae - **Test Paper distribution and result analysis**
85- L78	Poaceae
	Entering Internal Test-III Marks into University portal
86- L79	**Model Test**
87-MT	**Model Test**
88-MT	**Model Test**
89-MT	**Model test paper distribution and previous year university question paper discussion**
90-L-80	**Feedback of the Course, analysis and report preparation**
	Last Working day on 31.10.2014

Course Outcomes

Learning Outcomes	**COs** of the course "<Taxonomy of Angiosperms >"
CO1	Gained knowledge about identification of plant species.
CO2	Learned key preparation.
CO3	Learned to identify binomial using flora of presidency Madras.
CO4	Learned to prepare Herbarium.
CO5	Learned to write field note.
CO6	Learned about RFLP & ISSR.
CO7	Learned about DNA Bar Coding.
CO8	Learned about the Economic important plants.
CO9	

Experimental Learning	
EL1	Floral dissection & technical describtion of plants.
EL2	Identification of plants.
EL3	Identification of Bionmial.
EL4	Preparation of herbarium & field note.
EL5	Identification of Economically important plants & their uses.
Integrated Activity	
IA1	Study tour of Taxonomic interest.
IA2	Collection of Plants.
IA3	Herbarium preparation & field notebook.
IA4	Preparation of photo album of plants prescribed in the syllabus.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

HOD Signature Staff Signature

Principal

St. John's College, Palayamkottai

Department of Botany

COURSE ACADEMIC PLAN

(Prepared by staff member handling the course)

Programme Name	M.Sc. Botany
Course Name	Medicinal Botany & Dietetics
Course Code	KBOE41
Class	II year (2017-2018)
Semester	Even
Staff Name	Dr. R. Selva Kumari & Prof. Mrs. Kanimozhi Celina
Credits	3
L. Hours /P. Hours	3 / WK
Total 45Hrs/Sem Internal Test-3 Hrs Model Test-3 Hrs Dept. Meetings-2 Hrs College Meetings-2 Hrs Remaining 35 Hrs (5 units; 5×7=35; 07Hrs /unit)	

Course Objectives

- To know the basic knowledge on medicinal plants & its applications.
- To promote good health through diet & nutrition.
- To educate the science of nutrition in preventing development of disease.
- To educate on the nutritional standards & specifications for the healthy persons & patients.
- To impart knowledge on the therapeutic value of plant foods.

Syllabus

Medicinal Botany and Dietetics

Medicinal Botany:-

Unit –I

Study of the following plants with reference to their Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root), *Acorus calamus* (Rhizome), *Tylophora asthmatica* (leaf), *Terminalia chebula* (fruit), *Plantago ovata* (seed) and *Holarrhena antidysenterica* (bark).

Unit - II

Source, properties and medicinal uses of some phyto oils resources -Olive oil, Castor oil, Neem oil, Mentha oil and Lavender oil.

Unit - III

Dietetics- Therapeutic value of Indian plant foods- a) rice b) wheat; c) green gram, black gram, soya bean d) lemon, banana, Guava, e) Ginger, Turmeric, Coriander, Garlic, Cumin and Clove.

Unit – IV

Plant nutraceuticals- definition and sources. Study of plant foods (food as medicine) in the treatment of some selected diseases – anorexia, arthritis, constipation, diarrhoea, diabetes, psoriasis, hypertension and memory loss.

Unit- V

Plant foods as Antioxidants - Definition - types, PUFA, Probiotics, Prebiotics, Dietary fibers, Omega-3 fatty acids. Cosmeceuticals – Definition, Retinoic acid.

Course Calendar

Hour allotment	**Class Schedule**
	Odd Semester Begin on 07.12.2017
1-L1	Habitat, Habit, Systematic position, Morphology of their useful parts and uses of: *Tinospora cordifolia* (Root)
2-L2	*Acorus calamus* (Rhizome) continuation
3- L3	*Acorus calamus* (Rhizome)
4-L4	*Tylophora asthmatica* (leaf)
5 - P1	**Welcoming of First year and Inauguration of Botany Association**
6-L5	*Terminalia chebula* (fruit)
7-L6	*Plantago ovata* (seed) continuation
8-L7	*Holarrhena antidysenterica* (bark).
9- L8	Source, properties and medicinal uses of phyto oils – Olive oil - **Allotting portion for Internal Test-I**
	Internal Test I begins
10- L9	Olive oil continuation
11-IT-1	**Internal Test-I**
12-L10	Castor oil source & uses
13-L11	Castor oil properties - **Test Paper distribution and result analysis**
	Entering Internal Test-I Marks into University portal
14-L12	Neem oil – Uses
15-L13	Neem oil - source & properties
16- P2	**College level meeting/Cell function**
17-L14	Mentha oil - properties

18-L15	Mentha oil – Medicinal uses
19-L16	Lavender oil – source & properties
20-L17	Lavender oil – Medicinal uses - **Allotting portion for Internal Test-II**
	Internal Test II begins
21- L18	Therapeutic values - Rice
22- IT-II	**Internal Test-II**
23-L19	Wheat - **Test Paper distribution and result analysis**
	Entering Internal Test-II Marks into University portal
24-L20	Green gram
25- P3	**Department Seminar**
26-L21	Black gram
27-L22	Soya bean, Lemon
28-L23	Banana, Guava
29- P4	**College level meeting/ function**
30-L24	Ginger & Turmeric
31-L25	Coriander & Garlic
32-L26	Cumin and Clove - **Allotting portion for Internal Test-III**
	Internal Test III begins
33-L27	Plant food used in the treatment of Anorexia, Arthritis
34-IT-III	**Internal Test-III**
35-L28	Constipation, Diarrhoea, Diabetes
36-L29	Psoriasis, Hypertension And Memory Loss
37- L30	Plant foods as Antioxidants
38-L31	PUFA, Probiotics, Prebiotics
39-L32	Dietary fibers, Omega-3 fatty acids
40-L33	Cosmeceuticals – Definition, Retinoic acid - **Test Paper distribution and result analysis**
	Entering Internal Test-III Marks into University portal
41- MT	**Model Test**
42-MT	**Model Test**
43-MT	**Model Test**
44- L34	**Model test paper distribution and previous year university question paper discussion**
45-L35	**Feedback of the Course, analysis and report preparation**
	Last Working day on 23.04. 2018

Course Outcomes

Learning Outcomes	**COs** of the course "< **Medicinal Botany and Dietetics** >"
CO1	Gained knowledge about nutritive diet for different age groups.
CO2	Acquired knowledge about healthy food for normal person & patient.
CO3	Acquire knowledge in Dietetics to prevent mortality due to mal nourishment.
CO4	
CO5	
CO6	

CO7	
CO8	
CO9	
Experimental Learning	
EL1	Identification of Medicinal plants
EL2	Identification of plant foods as medicine.
EL3	Identification of plant foods as Antioxidants.
EL4	Extraction of volatile oil from medicinal palnts.
Integrated Activity	
IA1	Visit to Medicinal Garden.
IA2	Identification of medicinal plants & their uses.

Blended Learning : using PPT, video, library resources, ICT techniques, E-learning resources, Google classroom, study tour, etc.,

For Advanced Learner : use library books, E- books, motivate student to prepare for higher study.

For slow learner : special care taken, motivate the advanced learner to support the slow learner to study.To attend the remedial classes.

Extension activity : Motivate student to take classes for school students.

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