RAJAH SERFOJI GOVT.COLLEGE (AUTONOMOUS)

THANJAVUR — 05

Department of Botany

ALLIED BOTANY SYLLABUS

RAJAH SERFOJI GOVT. COLLEGE (AUTONOMOUS)

THANJAVUR —05

Department of Botany

Board of studies meeting

The Board of studies meeting in Botany was held on 18.08.22 at 11.30 am in the Botany Department under the Chairmanship of Dr. M. JAWAHAR.

The following members were present in themeeting.

External members:

1. Dr. T.Senthilkumar
2. Dr. G.Dhandapani
3. Dr.K.Vasanth

The syllabi for B.Sc., Allied Botany Papers, I (A3AB1), II (A4AB2) and III (A4ABP – Practical) Under CBCS system were discussed, finalized and approved with minor corrections. The syllabi are appended herewith.

Chairman

Dr. M. JAWAHAR, M.Sc.,Ph.D.,
HEAD IN BOTANY
RAJAH SERFOJI GOVT. COLLEGE (Autonomous)
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TAMILNADU, INDIA.

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RAJAH SERFOJI GOVT. COLLEGE
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THANJAVUR —05

Department of Botany: Board of studies meeting

Board of studies members:

UNIVERSITY NOMINEE : Dr.T.Senthilkumar
Professor in Botany,
Bharathidasan University,
Trichy – 24.

DEPARTMENT NOMINEE : 1. Dr.G.Dhandapani
Assistant Professor in Botany,
Konguadu Arts and Science College,
Coimbatore.

2. Dr.K.Vasanth,
Assistant Professor in Botany,
Bharathiyar University,
Coimbatore.

CHAIRMAN : Dr.M.JAWAHAR,
Assistant Professor & Head,
Department of Botany,
Rajah SerfojiGovt.College(A),
Thanjavur-05

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RAJAH SERFOJI GOVT.COLLEGE (AUTONOMOUS)
THANJAVUR – 5

(For Candidates admitted from 2022 -2023 onwards)
DEPARTMENT OF BOTANY
ALLIED BOTANY
(For B.Sc., Zoology and Biochemistry Major Students)

Paper Sl.No	Semester	Subject Code	Title of the paper	Hours / Week	Credits
I	III	A3AB1	Allied Botany Paper – I	4	4

OBJECTIVES:

- To develop an aptitude towards plant diversity.
- To study the general characters, structure and lifecycle of algae, fungi, bryophytes, pteridophytes and gymnosperms.
- To study the economic importance.
- To study morphology of inflorescence and types.
- To study systems of classifications and general outline of Bentham and Hooker's classification.

Unit: 1 Thallophytes: Algae–General characters of Algae, Detailed study of the following: *Oscillatoria*, *Oedogonium*, *Ectocarpus* and *Polysiphonia*, Economic importance of Alage.

Unit: 2 **Fungi and Virus:**

Fungi: General characters of Fungi, Detailed study of the following:

Albugo, Yeast (*Saccharomyces cerevisiae*), and *Polyporus*, Economic importance of Fungi.

Virus: General characters, Structure of TMV and T4 phage.

Unit: 3 **Bryophytes, Pteridophytes and Gymnosperms:** General characters, Anatomical features and reproduction of *Funaria*, *Adiantum* and *Cycas*.

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Unit: 4 **Morphology:** Inflorescence types -Racemose, Cymose, and Mixed–Special types, Cyathium, Hypanthodium, Verticillaster and Thyrsus. Technical description of flower and floral diagram.

Unit: 5 **Taxonomy:** Systems of classification, General outline of Bentham and Hooker's classification. Detailed study and economic importance of the families: *Annonanceae*, *Rutaceae*, *Leguminosae*, *Cucurbitaceae*, *Apocynaceae*, *Lamiaceae* and *Poaceae.*

Reference:

1. Rao, K.N. and Krishnamurthy, K.V. 1979. Ancillary Botany.S. Viswanathan& Co., Chennai.
2. Nathawat, G.S., Sharma., P.D and Shani R.K. 1977. A Text Book of Botany. Ramesh Book Depot. Jaipur.
3. Fullar, H.J., and Tippo.O. 1949. College Botany, Hendry. Holt & co.
4. Rajaram, P. Allied Botany 1983. College Book Publisher. Chennai.
5. Jeyaram, P. Allied Botany 1983. Veekay Publishing house. Chennai.
6. Muneeswaran.A. Allied Botany, Srinivas Book Center, Thanjavur.
7. Narayanaswamy.R.V.,Rao.K.N. and Raman. A. 1992. Out lines of Botany, S. Viswanathan Printers and Publisher Pvt Ltd., Chennai.

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Question Paper Pattern

Maximum Marks: 75 Duration:3hrs

- **Part A 10 X 2 = 20 Answer All questions**
  (Two questions from each unit)
- **Part B 5 X 5 = 25 Answer All questions**
  (Either or type -Two questions from each unit)
- **Part C 3 X10= 30 Answer Any THREE questions**
  (One question from each unit)

Course outcomes:

On completion of the course, students are able to

- To understand the biodiversity of thalophytes.
- To understand the systematic position, morphology, structure, lifecycle pattern and economic importance of algae and fungi.
- To understand the concept of taxonomy and systematic position, salient features and reproduction of bryophytes, pteridophytes and gymnosperms.
- Understand the plant morphology and technical terms of floral parts of angiosperms.
- To understand the concept of taxonomy and systematic position of angiosperms.
- Understand salient features and economic importance of angiosperms.

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Paper Sl.No	Semester	Subject Code	Title of the paper	Hours / Week	Credits
II	IV	A4AB2	Allied Botany Paper – II	4	4

OBJECTIVES:

- To study dicot and monocot plant anatomy and their difference.
- To study plant cell structure and cell organelles.
- To study flowering plant reproduction, fertilization and embryogeny.
- To study general classification and ecological adaptations of plants.
- To study photosynthesis and respiration of plant.
- To study basic principle of plant tissue culture techniques.

Unit: 1 **Anatomy and Cytology:**

Anatomy: Primary structure–Dicot stem, root and leaf– Monocot stem, root and leaf – secondary thickening in Dicot stem. Heart wood and sap wood.

Cytology: Ultra structure of plant cell, Brief outline of cell organelles – Cell wall, Endoplasmic reticulum, Golgi complex, Mitochondria, Chloroplast and Nucleus.

Unit: 2 **Embryology and Genetics:**

Embryology: Structure and development of anther - malegametophyte development. Structure of ovule and development of female gametophyte (Polygonum type). Endosperm (Nuclear, Cellular, Helobial and Ruminate). Double fertilization, development of Dicot embryo (*Capsella*).

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Genetics: Laws of Mendel, monohybrid and dihybrid ratio.

Unit: 3 **Plant Ecology and Evolution:**

Plant Ecology: Ecological factors, General Classification and adaptations of Hydrophytes (*Hydrilla*), Adaptations of Xerophytes (*Nerium*, Opuntia) and mesophytes (*Helianthus*).

Evolution: Origin of life, theories of Lamarckism and Darwinism.

Unit: 4 **Plant Physiology :**

Transpiration and factors affecting transpiration, guttation. Growth regulators (Auxins and Cytokinins).

Photosynthesis: Light and Dark reaction.

Respiration: Aerobic–Glycolysis and Krebs cycle, Anaerobic - Fermentation.

Movement: Geotropism, phototropism, Thigmotropism and Hydrotropism (Definition and examples only).

Unit: 5 **Plant Biotechnology:** Sterilization, Murashige and Skoog's medium. Micropropagation, Organogenesis, Somatic embryogenesis. Applications of plant Biotechnology.

Reference:

1. Rao, K.N. and Krishnamurthy, K.V. 1979. Ancillary Botany.S.Viswanathan& Co, Chennai.
2. Nathawat, G.S. Sharma., P.D and Shani R.K. 1977. A text book of botany. Ramesh Book. Jaipur
3. Fullar, H.J and Tippo.O. 1949. College Botany, Henry, Holt & Co.
4. Rajaram, P. Allied Botany 1983. College Book Publisher, Chennai.
5. Jeyaram, P. Allied Botany 1983. Veekay Publishing house, Chennai.
6. Muneeswaran.A. Allied Botany. Srinivas Book Publisher, Thanjavur.
7. Narayanaswamy.R.V.Rao.K.N. and Raman.A. 1992. Out lines of Botany.S. Viswanathan printers and publisher Pvt Ltd., Chennai.
8. Singh, Pande, and Jain, 1987, Antomy of seed plants.Rastogi publications.
9. Verma, P.S and Agarwal, V.K 1991.Cytology. S.Chand &Co, New Delhi – 55
10. Kumaresan.V.Biotechnology, Saras Publications, Nagarcoil.

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11. Dubey.R.CA text book of biotechnology.
S.Chand & Co.
12.Palaniyappan.S. Biotechnology (Tamil).

Question Paper Pattern

Maximum Marks: 75 Duration: 3hrs

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  (Two questions from each unit)
- **Part B 5 X 5 = 25 Answer All questions**
  (Either or type -Two questions from each unit)
- **Part C 3 X10= 30 Answer Any THREE questions**
  (One question from each unit)

Course outcomes:

On completion of the course, students are able to

- Understand the scope and importance of plant anatomy and normal secondary growth in plants.
- Gain knowledge about cell and cell organelles.
- Know the concept of Mendel's law and experiments. Gain knowledge about the sex organs development, fertilization and embryogeny of flowering plat.
- Understand the ecology, plant communities and ecological adaptations of plant. Know the concept of evolution, origin of life and their theories.
- Understand the principle and basic protocols for plant tissue culture

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Paper Sl.No	Semester	Subject Code	Title of the paper	Hours / Week	Credits
III	IV	A4ABP	Allied Botany Paper-III Practical	3	4

OBJECTIVES:

- ❖ To study the identification of flowering plants.
- ❖ To study micro preparation of thalophytes and flowering plant.
- ❖ To study plant field collection.
- ❖ To study herbarium techniques.
- ❖ To study basic plant tissue culture technique.

One allied practical paper for subjects included in paper - I and paper - II. In practical candidates are expected to carry out the following exercise.

a). To describe the technical terms of the plants with respective to syllabi.
b). To make dissection of the flower and construct floral diagrams
c) To study monocot, dicot and ecology plant anatomy in the theory syllabus.
d) Sterilization techniques – demonstration only
e) Plant physiology – Demonstration of experimental set-ups
f) Field visit and plant collection, submission of five herbarium specimens.
g) To submit a record of work done by the candidate during the course of study in practical classes, duly certified and bonafied.

Reference:

1. Rao, K.N. and Krishnamurthy, K.V. 1979. Ancillary Botany Viswanathan & Co, Chennai.
2. Nathawat, G.S., Sharma., P.D and Shani R.K. 1977. A text Book of Botany, Ramesh Book Depot. Jaipur.
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6. Muneswaran.A. Allied Botany, Srinivas Book Center, Thanjavur.
7. Narayanaswamy.R.V. Rao.K.N, and Raman.A. 1992. Out lines of Botany, Visvanathan Printers and Publisher Pvt Ltd., Chennai.
8. Sing, Pande, and Jain, 1987, Anatomy of seed plants. Rastogi publications, Meerut.
9. Verma, P.S. and Agarwal., V.K. 1991. Cytology.S. Chand & Co. Ram Nagar, New Delhi.
10. Kumaresan.V. Biotechnology, Saras Publications, Nagarcoil .

Course outcomes:

On completion of the course, students are able to

- ❖ Students learn to carry out practical work in the field and in the laboratory with minimal risk.
- ❖ Gain introductory experience in applying each of the following skills.

1. Gain knowledge about plant diversity.
2. Gain knowledge about the identification of flowering plant and plant morphology.
3. Gain knowledge about ecology, ecological adaptations.
4. Gain knowledge about the micro preparations.
5. Gain knowledge about the photosynthesis and respiration.
6. Gain knowledge about the plant tissue culture technique.
7. Gain knowledge about the preparation of herbarium.

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