

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Autonomous Status)
(Affiliated to Savitribai Phule Pune University, Pune)

DEPARTMENT OF BOTANY

Course outcome (2022 Pattern)

Class : M. Sc. I (Semester - I)

Paper Code: PSBT 111 Plant Systematics I

Course Outcome:

By the end of course students will be able to

- CO1. Get knowledge about cryptogams to conserve Cryptogamic diversity.
- CO2. Classify the cryptogams up to species level.
- CO3. Get aware about the importance of Cryptogams.
- CO4. Get knowledge about life history of algae, fungi bryophytes.
- CO5. Explain the role of Algae, Fungi and Bryophytes in human welfare.
- CO6. Aware about plant conservation in society.
- CO7. Analyze industrial applications of algae.

Paper Code : PSBT 112 Cell Biology

Course Outcome:

By the end of course students will be able to

- CO1.Explain the concepts of the cell.
- CO2. Understand basic cell structure.
- CO3.Describe the structure and function of cell membrane.
- CO4. Expert with some cytological techniques.
- CO5. Understand current findings in cell biology.
- CO6. Demonstrate and explain different phases of cell cycle.
- CO7. Get knowledge of different types of cell communication.

Paper Code : PSBT 113 Genetics and plant Breeding

Course Outcome:

By the end of course students will be able to

- CO1. Know applications of gene interactions.
- CO2. Use breeding techniques in field on plants.
- CO3. Expert in evaluation of conclusions based on genetic data.
- CO4. Get knowledge about gene expression and regulation of gene.
- CO5. Demonstrate emasculation and pollination methods.
- CO6. Explain floral biology for breeding techniques.
- CO7. Demonstrate mutation in plant cells.

Paper Code : PSBT 114 Advanced Botanical techniques

Course Outcome:

By the end of course students will be able to

- CO1.Get acquainted in advance botanical techniques.
- CO2.Understand different types and working of microscopes.

- CO3. Students' expertise in microscopic techniques.
- CO4. Expertise in different centrifugation techniques.
- CO5. Train to use different electrochemical techniques.
- CO6. Understand DNA sequencing techniques.
- CO7. Analyze antigen –antibody interaction.

Paper Code : PSBT 115 Practical based on PSBT 111 and PSBT 112

Course Outcome:

By the end of course students will be able to

- CO1. Develop identification skill in cryptogams.
- CO2. Train in cell biology techniques.
- CO3. Understand basic knowledge about life cycle of cryptogams.
- CO4. Internal and external structure of cryptogams.
- CO5. Explain basic knowledge about evolution of lower cryptogams.
- CO6. Discuss spore dispersal mechanism.
- CO7. Understand variations in cryptogamic diversity.

Paper Code : PSBT 116 Practical based on PSBT 113 and PSBT 114

Course Outcome:

By the end of course students will be able to

- CO1. Explain basic cell structure.
- CO2. Understand basic biological concepts.
- CO3. Get acquainted with some cytological techniques.
- CO4. Understand basic knowledge about structure of cell organelles.
- CO5. Explain mechanism of cells in plant.
- CO6. Train in different isolation techniques in cell organelle.
- CO7. Interprets cell structure and their function.

Class : M. Sc. I (Semester - II)

Paper Code : PSBT 121 Plant Systematics II

Course Outcome:

By the end of course students will be able to

- CO1. Get knowledge about cryptogams to conserve Cryptogamic diversity.
- CO2. Classify the cryptogams up to species level.
- CO3. Get aware about the importance of Cryptogams.
- CO4. Get knowledge about life history of algae, fungi bryophytes.
- CO5. Explain the role of Algae, Fungi and Bryophytes in human welfare.
- CO6. Aware about plant conservation in society.
- CO7. Analyze industrial applications of algae.

Paper Code : PSBT 122 Plant Physiology and Biochemistry

Course Outcome:

1. Use knowledge for improvement of agricultural yield
2. Students aware about the plant to response environmental conditions.
3. Students get knowledge of internal activities in plant.

4. Development of expertise in plant physiology.
5. Get knowledge of plant metabolism.
6. Students get knowledge of plant cycle.
7. Students get knowledge of biomolecules.

Paper Code: PSBT 123 Molecular Biology and Genetic Engineering

Course Outcome:

1. Experts required in future for genetic library of plants.
2. The main outcome of this course is to acquaint students with some cytological techniques.
3. Experts required in future for genetic library of plants.
4. Acquaint the students with synthesis of nucleic acids and PCR technique.
5. Students get knowledge of genetical heredity.
6. Students become expertise in Plant Breeding Techniques.
7. Get knowledge for improving the new crop variety.

Paper Code : PSBT 124 Plant Ecology and Biodiversity

Course Outcome:

1. Appreciate the ethical, cross-cultural and historical context of environmental issues and the links between human and natural systems.
2. The student can analyse and interpret the plant relation with the environment and impact of human interventions on ecosystem.
3. Provide plant description, describe the morphology and reproductive structure of cryptogams.
4. Gain the proficiency in the identification of cryptogams.
5. Knowledge of comparison between cryptogams and other plant groups.
6. Knowledge of scope of the cryptogams diversity.
7. Knowledge about habitat conservation of cryptogams diversity.

Paper Code : PSBT 125 Practical based on PSBT 121 and PSBT 122

Course Outcome:

By the end of course students will be able to

- CO1. Develop identification skill in cryptogams.
- CO2. Train in cell biology techniques.
- CO3. Understand basic knowledge about life cycle of cryptogams.
- CO4. Internal and external structure of cryptogams.
- CO5. Explain basic knowledge about evolution of lower cryptogams.
- CO6. Discuss spore dispersal mechanism.
- CO7. Understand variations in cryptogamic diversity.

Paper Code : PSBT 126 Practical based on PSBT 123 and PSBT 124

Course Outcome:

By the end of course students will be able to

- CO1. Explain basic cell structure.
- CO2. Understand basic biological concepts.
- CO3. Get acquainted with some cytological techniques.
- CO4. Understand basic knowledge about structure of cell organelles.
- CO5. Explain mechanism of cells in plant.
- CO6. Train in different isolation techniques in cell organelle.
- CO7. Interprets cell structure and their function.

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DEPARTMENT OF BOTANY

Course outcome (2022 Pattern)

Class : M. Sc. II (Semester - III)

Paper Code: PSBT 231 Angiosperms and Evolution

Course Outcome:

By the end of the course, students will be able to:

- CO1. Describe the morphology and reproductive structure of Phanerogams.
- CO2. Identify, describe and study in detail life cycle of Phanerogams.
- CO3. Know scope of the Phanerogams diversity with special reference to Gymnosperms and Angiosperms.
- CO4. Know different methods of conservation of Phanerogams. CO5. Study the applications of cryptogams.
- CO6. Describe and identify flowering plants.
- CO7. Understand the local flora with respect to Phanerogams.

Paper Code: PSBT 232 Developmental Botany

Course Outcome:

1. Students get knowledge of internal structure of tissue system in plant.
2. Students are aware about microsporogenesis, megasporogenesis and embryogenesis.
3. Students get knowledge of tissue and tissue systems present in plant.
4. Students get knowledge of secondary growth in plants.
5. Students are able to know reasons for anomalous secondary growth in plants.
6. Students get knowledge of wood anatomy.
7. Students get knowledge of endosperm and seed.

Paper Code: PSBT 233 Computational Botany

Course Outcome:

- 1) Students will be expert in use of computer to solve biological problems.
- 2) Students can be master in solving biological problems with the help of statistics.
- 3) Students will apply their knowledge in various branches of biology.
- 4) Students' expertise in microscopic techniques.
- 5) Expertise in different centrifugation techniques.
- 6) Train to use different electrochemical techniques.
- 7) Students will apply their knowledge in various branches of biology.

Paper Code: PSBT 234 Elective Papers Advanced Mycology and Plant Pathology - I

A. Advanced Mycology – I

Course Outcome:

By the end of course students will be able to

- CO1. Get knowledge about cryptogams to conserve Cryptogamic diversity.
- CO2. Classify the cryptogams up to species level.
- CO3. Get aware about the importance of Cryptogams.
- CO4. Get knowledge about life history of algae, fungi bryophytes.
- CO5. Explain the role of Algae, Fungi and Bryophytes in human welfare.
- CO6. Aware about plant conservation in society.
- CO7. Analyze industrial applications of algae.

B. Advanced Physiology – I

Course Outcome:

1. Use knowledge for improvement of agricultural yield
2. Students aware about the plant to response environmental conditions.
3. Students get knowledge of internal activities in plant.
4. Development of expertise in plant physiology.
5. Get knowledge of plant metabolism.
6. Students get knowledge of plant cycle.
7. Students get knowledge of biomolecules.

C. Bryology – I

Course Outcome:

By the end of course students will be able to

- CO1. Get knowledge about cryptogams to conserve Cryptogamic diversity.
- CO2. Classify the cryptogams up to species level.
- CO3. Get aware about the importance of Cryptogams.
- CO4. Get knowledge about life history of algae, fungi bryophytes.
- CO5. Explain the role of Algae, Fungi and Bryophytes in human welfare.
- CO6. Aware about plant conservation in society.
- CO7. Analyze industrial applications of algae.

D. Angiosperm Taxonomy – I

Course Outcome:

By the end of the course, students will be able to:

- CO1. Describe the morphology and reproductive structure of Phanerogams.
- CO2. Identify, describe and study in detail life cycle of Phanerogams.
- CO3. Know scope of the Phanerogams diversity with special reference to Gymnosperms and Angiosperms.
- CO4. Know different methods of conservation of Phanerogams.
- CO5. Study the applications of cryptogams.
- CO6. Describe and identify flowering plants.
- CO7. Understand the local flora with respect to Phanerogams.

Paper Code: PSBT 235 Practical based on PSBT 231, PSBT 232 and PSBT 233

Course Outcome:

By the end of course students will be able to

- CO1. Develop identification skill in cryptogams.
- CO2. Train in cell biology techniques.
- CO3. Understand basic knowledge about life cycle of cryptogams.
- CO4. Internal and external structure of cryptogams.
- CO5. Explain basic knowledge about evolution of lower cryptogams.
- CO6. Discuss spore dispersal mechanism.
- CO7. Understand variations in cryptogamic diversity.

Paper Code: PSBT 236 Practical

A. Advanced Mycology – I

Course Outcome:

By the end of course students will be able to

- CO1. Get knowledge about cryptogams to conserve Cryptogamic diversity.
- CO2. Classify the cryptogams up to species level.
- CO3. Get aware about the importance of Cryptogams.
- CO4. Get knowledge about life history of algae, fungi bryophytes.
- CO5. Explain the role of Algae, Fungi and Bryophytes in human welfare.
- CO6. Aware about plant conservation in society.
- CO7. Analyze industrial applications of algae.

B. Advanced Physiology – I

Course Outcome:

- 1. Use knowledge for improvement of agricultural yield
- 2. Students aware about the plant to response environmental conditions.
- 3. Students get knowledge of internal activities in plant.
- 4. Development of expertise in plant physiology.
- 5. Get knowledge of plant metabolism.
- 6. Students get knowledge of plant cycle.
- 7. Students get knowledge of biomolecules.

C. Bryology –I

Course Outcome:

By the end of course students will be able to

- CO1. Get knowledge about cryptogams to conserve Cryptogamic diversity.
- CO2. Classify the cryptogams up to species level.
- CO3. Get aware about the importance of Cryptogams.
- CO4. Get knowledge about life history of algae, fungi bryophytes.
- CO5. Explain the role of Algae, Fungi and Bryophytes in human welfare.
- CO6. Aware about plant conservation in society.

CO7. Analyze industrial applications of algae.

D. Angiosperm Taxonomy – I

Course Outcome:

By the end of the course, students will be able to:

CO1. Describe the morphology and reproductive structure of

Phanerogams.

CO2. Identify, describe and study in detail life cycle of Phanerogams.

CO3. Know scope of the Phanerogams diversity with special reference to
Gymnosperms and Angiosperms.

CO4. Know different methods of conservation of Phanerogams.

CO5. Study the applications of cryptogams.

CO6. Describe and identify flowering plants.

CO7. Understand the local flora with respect to Phanerogams.

Class : M. Sc. II (Semester - IV)

Paper Code: PSBT 241 Plant Pathology

Course Outcome:

- 1) Students can be understood the details of meteorological factors and pathogens involved in disease development. So, it will help as prerequisite for avoiding the disease spreading.
- 2) Knowledge of plant pathology will helpful to use diseases resistant varieties of crop plants and their disease management.
- 3) Students can be start their own business related to eco-friendly management of plant diseases and its consultancy.
- 4) Students can be confident about basic idea and comparative study of cryptogams.
- 5) Students can be experts in identification of lower plants.
- 6) Students can be start their own business based on applications of cryptogams.
- 7) Get knowledge about life history of algae, fungi bryophytes.

Paper Code: PSBT 242 Industrial Botany

Course Outcome:

1. Preparation of different garden at personal level and to encourage people
2. Hands on techniques of packaging, harvesting and hydroponics.
3. Students can start their own business in cold storage, packing of flowers and fruits.
4. Develop plant tissue culture industry.
5. Get expertise to develop agro based industries.
6. Get expertise in field of Industrial Botany.
7. Understand basics of plant resource based industries.

Paper Code: PSBT 243 Plant Biotechnology

Course Outcome:

- 1) Learn the basic concepts, principles and techniques in plant biotechnology.
- 2) Knowledge acquired students will be able to apply techniques in other branches such as biological, medical, agricultural etc.
- 3) Use of bio techniques to explore plant to its molecular level.
- 4) Get knowledge of Biopesticide and Biofertilizer.
- 5) Acquire knowledge of organic farming with respect to Biopesticides and Biofertilizers.
- 6) Know scope of the industrially important fungi and their applications.
- 7) Get knowledge of Pharmaceutical Industry.

Paper Code: PSBT 244 Elective Papers

A. Advanced Mycology – II

Course Outcome:

By the end of course students will be able to

- CO1. Get knowledge about cryptogams to conserve Cryptogamic diversity.
- CO2. Classify the cryptogams up to species level.
- CO3. Get aware about the importance of Cryptogams.
- CO4. Get knowledge about life history of algae, fungi bryophytes.
- CO5. Explain the role of Algae, Fungi and Bryophytes in human welfare.
- CO6. Aware about plant conservation in society.
- CO7. Analyze industrial applications of algae.

B. Advanced Physiology – II

Course Outcome:

1. Use knowledge for improvement of agricultural yield
2. Students aware about the plant to response environmental conditions.
3. Students get knowledge of internal activities in plant.
4. Development of expertise in plant physiology.
5. Get knowledge of plant metabolism.
6. Students get knowledge of plant cycle.
7. Students get knowledge of biomolecules.

C. Bryology – II

Course Outcome:

By the end of course students will be able to

- CO1. Get knowledge about cryptogams to conserve Cryptogamic diversity.
- CO2. Classify the cryptogams up to species level.
- CO3. Get aware about the importance of Cryptogams.
- CO4. Get knowledge about life history of algae, fungi bryophytes.
- CO5. Explain the role of Algae, Fungi and Bryophytes in human welfare.
- CO6. Aware about plant conservation in society.
- CO7. Analyze industrial applications of algae.

D. Angiosperm Taxonomy – II

Course Outcome:

By the end of the course, students will be able to:

- CO1. Describe the morphology and reproductive structure of Phanerogams.
- CO2. Identify, describe and study in detail life cycle of Phanerogams.
- CO3. Know scope of the Phanerogams diversity with special reference to Gymnosperms and Angiosperms.
- CO4. Know different methods of conservation of Phanerogams.
- CO5. Study the applications of cryptogams.
- CO6. Describe and identify flowering plants.
- CO7. Understand the local flora with respect to Phanerogams.

Paper Code: PSBT 245 Practical based on PSBT 241, PSBT 242 and PSBT 243

Course Outcome:

By the end of course students will be able to

- CO1. Explain basic cell structure.
- CO2. Understand basic biological concepts.
- CO3. Get acquainted with some cytological techniques.
- CO4. Understand basic knowledge about structure of cell organelles.
- CO5. Explain mechanism of cells in plant.
- CO6. Train in different isolation techniques in cell organelle.
- CO7. Interpret cell structure and their function.

Paper Code: PSBT 246 Research Project and Summer Training

Course Outcome:

1. Information acquired about research work.
2. Getting of awareness of innovative methodology.
3. Significant conclusions and outputs.
4. Information acquired about research work.

5. Getting of awareness of innovative methodology.
6. Significant conclusions and outputs.
7. Information acquired about research work.