

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 (2019 Pattern)**

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

**Paper Code: BOT 4101 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 : BOT 4102 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 : BOT 4103 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 : BOT 4104 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 : BOT 4105 Practical based on BOT 4101 and BOT 4102**

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 : BOT 4106 Practical based on BOT 4103 and BOT 4104**

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.

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

### **Paper Code : BOT 4201 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 : BOT 4202 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: BOT 4203 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 : BOT 4204 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 : BOT 4205 Practical based on BOT 4201 and BOT 4202**

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 : BOT 4206 Practical based on BOT 4203 and BOT 404**

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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**Course outcome (2019 Pattern)**

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

**Paper Code: BOT5301 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: BOT5302 Developmental Botany**

**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: BOT5303 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: BOT5304 Elective Papers Advanced Mycology and Plant Pathology - I**

**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 lifehistory 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.

**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.

**Paper Code: BOT5305 Practical based on BOT5301, BOT5302 and BOT5303**

Course Outcome:

By the en 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.

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

#### **Paper Code: BOT5401 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: BOT5402 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: BOT5403 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: BOT5404 Elective Papers**

**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.

**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.

**Paper Code: BOT5405 Practical based on BOT5401, BOT5402 and BOT5403**

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.

