## B.Sc. Botany,Zoology , Chemistry

## BOTANY SUBJECT

## COURSE OUTCOMES

## LECTURER NAME: CH. ABHINAY M.Sc.

## DETAILS OF COURSE TITLES & CREDITS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sem** | **Course No** | **Course Name** | **Course Type**  **(T/P/L)** | **Hrs/Week** | **Credits** | **Max. Marks** | **Max. Marks** |
| **Science: 4+2** | **Science: 4+2** | **Count/Internal/ Mid Assessment** | **Sem- End Exam** |
| **I** | 1 | Fundamentals of Microbes and Non-vascular Plants | T | 4 | 4 | 25 | 75 |
| Fundamentals of Microbes and Non-vascular Plants | L | 2 | 1 | - | 50 |
| **II** | 2 | Basics of Vascular plants and Phytogeography | T | 4 | 4 | 25 | 75 |
| Basics of Vascular plants and  Phytogeography | L | 2 | 1 | - | 50 |
| **III** | 3 | Anatomy and Embryology of Angiosperms, Plant Ecology and  Biodiversity | T | 4 | 4 | 25 | 75 |
| Anatomy and Embryology of Angiosperms,  Plant Ecology and Biodiversity | L | 2 | 1 | - | 50 |
| **IV** | 4 | Plant Physiology and Metabolism | T | 4 | 4 | 25 | 75 |
| Plant Physiology and Metabolism | L | 2 | 1 | - | 50 |
| 5 | Cell Biology, Genetics and Plant  Breeding | T | 4 | 4 | 25 | 75 |
| Cell Biology, Genetics and Plant  Breeding | L | 2 | 1 | - | 50 |
| **V** | 6A | Plant Propagation | T | 4 | 4 | 25 | 75 |
| Plant Propagation Lab | L | 2 | 1 | - | 50 |
| 7A | Seed Technology | T | 4 | 4 | 25 | 75 |
| Seed Technology Lab | L | 2 | 1 | - | 50 |
| **OR** | | | | | | |
| 6B | Vegetable Crops – Cultivation  Practices | T | 4 | 4 | 25 | 75 |
| Vegetable Crops – Cultivation  Practices Lab | L | 2 | 1 | - | 50 |
| 7B | Vegetable Crops – Post Harvest  Practices | T | 4 | 4 | 25 | 75 |
| Vegetable Crops – Post harvest  Practices Lab | L | 2 | 1 | - | 50 |
| **OR** | | | | | | |
| 6C | Plant Tissue Culture | T | 4 | 4 | 25 | 75 |
| Plant Tissue Culture Lab | L | 2 | 1 | - | 50 |
| 7C | Mushroom Cultivation | T | 4 | 4 | 25 | 75 |
| Mushroom Cultivation Lab | L | 2 | 1 | - | 50 |
| **OR** | | | | | | |
| 6D | Gardening and Landscaping | T | 4 | 4 | 25 | 75 |
| Gardening and Landscaping Lab | L | 2 | 1 | - | 50 |
| 7D | Agro forestry | T | 4 | 4 | 25 | 75 |
| Agro forestry Lab | L | 2 | 1 | - | 50 |

**Note**: \*Course type code: T: Theory, L: Lab, P: Problem solving

|  |  |  |
| --- | --- | --- |
| **B.Sc.** | **Semester - I** | **Credits: 1** |
| **Course: 1(L)** | **Fundamentals of Microbes and Non-vascular Plants Lab** | **Hrs./Wk.: 2** |

**Course Outcomes:** On successful completion of this practical course, student shall be able to.

1. Demonstrate the techniques of use of lab equipment, preparing slides and identify the material and draw diagrams exactly as it appears.
2. Observe and identify microbes and lower groups of plants on their own.
3. Demonstrate the techniques of inoculation, preparation of media etc.
4. Identify the material in the permanent slides etc.

|  |  |  |
| --- | --- | --- |
| **B.Sc.** | **Semester - II** | **Credits: 1** |
| **Course: 2(L)** | **Basics of Vascular plants and Phytogeography Lab** | **Hrs./Wk.: 2** |

**Course Outcomes:** On successful completion of this course students shall be able to:

* Demonstrate the techniques of section cutting, preparing slides, identifying of the material and drawing exact figures.
* Compare and contrast the morphological, anatomical, and reproductive features of vascular plants.
* Identify the local angiosperms of the families prescribed to their genus and species level and prepare herbarium.
* Exhibit skills of preparing slides, identifying the given twigs in the lab, and drawing figures of plant twigs, flowers and floral diagrams as they are.
* Prepare and preserve specimens of local wild plants using herbarium techniques.

|  |  |  |
| --- | --- | --- |
| **B.Sc.** | **Semester - III** | **Credits: 1** |
| **Course: 3(L)** | **Anatomy and Embryology of Angiosperms, Plant Ecology and**  **Biodiversity Lab** | **Hrs./Wk.: 2** |

**Course Outcomes:** On successful completion of this practical course students shall be able to:

* Get familiarized with techniques of section making, staining and microscopic study of vegetative, anatomical, and reproductive structure of plants.
* Observe externally and under microscope, identify and draw exact diagrams of the material in the lab.
* Demonstrate application of methods in plant ecology and conservation of biodiversity and qualitative and quantitative aspects related to populations and communities of plants.

|  |  |  |
| --- | --- | --- |
| **B.Sc.** | **Semester - IV** | **Credits: 1** |
| **Course: 4(L)** | **Plant Physiology and Metabolism Lab** | **Hrs/Wk: 2** |

**Course outcomes:** On successful completion of this practical course, students shall be able to:

* Conduct lab and field experiments pertaining to Plant Physiology, that is, biophysical and biochemical processes using related glassware, equipment, chemicals, and plant material.
* Estimate the quantities and qualitative expressions using experimental results and calculations.
* Demonstrate the factors responsible for growth and development in plants.

|  |  |  |
| --- | --- | --- |
| **B.Sc.** | **Semester - IV** | **Credits: 1** |
| **Course: 5(L)** | **Cell Biology, Genetics and Plant Breeding Lab** | **Hrs./Wk.: 2** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

* Show the understanding of techniques of demonstrating Mitosis and Meiosis in the laboratory and identify different stages of cell division.
* Identify and explain with diagram the cellular parts of a cell from a model or picture and prepare models.
* Solve the problems related to crosses and gene interactions.
* Demonstrate plant breeding techniques such as emasculation and bagging.

|  |  |  |
| --- | --- | --- |
| **B. Sc** | **Semester-V** (Skill Enhancement Course - Elective) | **Credits: 4** |
| **Course: 6A** | **Plant Propagation** | **Hrs/Wk: 4** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

1. Explain various plant propagation structures and their utilization.
2. Understand advantages and disadvantages of vegetative, asexual and sexual plant propagation methods.
3. Assess the benefits of asexual propagation of certain economically valuable plants using apomictic and adventive polyembryony.
4. Demonstrate skills related to vegetative plant propagation techniques such as cuttings, layering, grafting and budding.
5. Apply a specific macro-propagation technique for a given plant species.

|  |  |  |
| --- | --- | --- |
| **B. Sc** | **Semester-V** (Skill Enhancement Course - Elective) | **Credits: 4** |
| **Course: 7A** | **Seed Technology** | **Hrs/Wk: 4** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

* 1. Explain the causes for seed dormancy and methods to break dormancy.
  2. Understand critical concepts of seed processing and seed storage procedures.
  3. Acquire skills related to various seed testing methods.
  4. Identify seed borne pathogens and prescribe methods to control them.
  5. Understand the legislations on seed production and procedure of seed certification.

|  |  |  |
| --- | --- | --- |
| **B. Sc** | **Semester-V** (Skill Enhancement Course - Elective) | **Credits: 4** |
| **Course: 6B** | **Vegetable Crops – Cultivation Practices** | **Hrs/Wk: 4** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

* 1. Identify different vegetable plants and realize their value in human nutrition.
  2. Analyses the types of soils to cultivate vegetable crops.
  3. Demonstrate skills on agronomic practices for cultivation of vegetable crops.
  4. Acquire knowledge on water, weed and disease managements in vegetable farming.
  5. Comprehend aspects related to harvesting and storage of produce.

|  |  |  |
| --- | --- | --- |
| **B. Sc** | **Semester-V** (Skill Enhancement Course - Elective) | **Credits: 4** |
| **Course: 7B** | **Vegetable Crops – Post Harvest Practices** | **Hrs/Wk: 4** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

* 1. Understand various practices for vegetable produce from harvesting to marketing.
  2. Demonstrate skills on storage, processing, and preservation of vegetables.
  3. Summarize causes for spoilage of vegetables before and during storage and methods to prevent and control them.
  4. Make use of preservation methods to reduce the loss of vegetable produce.
  5. Explain about value added products, packaging, and marketing of vegetables.

|  |  |  |
| --- | --- | --- |
| **B. Sc** | **Semester-V** (Skill Enhancement Course - Elective) | **Credits: 4** |
| **Course: 6C** | **Plant Tissue Culture** | **Hrs/Wk: 4** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

## Comprehend the basic knowledge and applications of plant tissue culture.

1. Identify various facilities required to set up a plant tissue culture laboratory.
2. Acquire a critical knowledge on sterilization techniques related to plant tissue culture.
3. Demonstrate skills of callus culture through hands on experience.
4. Understand the biotransformation technique for production of secondary metabolites.

|  |  |  |
| --- | --- | --- |
| **B. Sc** | **Semester-V** (Skill Enhancement Course - Elective) | **Credits: 4** |
| **Course: 7C** | **Mushroom Cultivation** | **Hrs/Wk: 4** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

1. Understand the structure and life of a mushroom and discriminate edible and poisonous mushrooms.
2. Identify the basic infrastructure to establish a mushroom culture unit.
3. Demonstrate skills preparation of compost and spawn.
4. Acquire a critical knowledge on cultivation of some edible mushrooms.
5. Explain the methods of storage, preparation of value-added products and marketing.

|  |  |  |
| --- | --- | --- |
| **B. Sc** | **Semester-V** (Skill Enhancement Course - Elective) | **Credits: 4** |
| **Course: 6D** | **Gardening and Landscaping** | **Hrs/Wk: 4** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

1. Acquire a critical knowledge about the aesthetic value, types and styles of gardens.
2. Perform filed operations in a garden by understanding the role of a gardener.
3. Identify various ornamental plants and explain the growth habits.
4. Propagate garden plants through various propagation techniques.
5. Demonstrate skills of designing and developing a garden.

|  |  |  |
| --- | --- | --- |
| **B. Sc** | **Semester-V** (Skill Enhancement Course - Elective) | **Credits: 4** |
| **Course: 7D** | **Agroforestry** | **Hrs/Wk: 4** |

**Course Outcomes:** After successful completion of this practical course the student shall be able to:

* + 1. Understand the concepts and economic value of agroforestry.
    2. Acquire a critical knowledge on systems and design of agroforestry.
    3. Explain silviculture practices in relation to agroforestry.
    4. Understand the role of agroforestry to reclaim the waste lands.
    5. Perform skills in relation to tree measurement techniques.