

## Skill enhancement (lecture 30%, practical 70%) 2 credits

### Learning Outcomes

On completion of the course the student will be able to

- Develop the concept of arranging flowers in an aesthetic manner
- They will learn flower arrangement for different occasions
- They will learn to use flower and foliage effectively
- Develop the required skills for pursuing a career in this field

Course I	Flower arrangement : Course Code RJBOTC01
Unit 1	Flower and plant identification, care and handling of cut flowers: Origin of flower designing.
Unit 2	Types and Choice of flower <ul style="list-style-type: none"><li>➤ Floral bouquets, baskets, wreaths</li><li>➤ Table centerpiece</li><li>➤ Ikebana</li></ul>
Unit 3	Different styles of flower arrangements <ul style="list-style-type: none"><li>➤ Oriental flower arrangements</li><li>➤ Traditional/ western flower arrangements</li><li>➤ Modern flower design</li><li>➤ Current trends in floral design</li></ul>
Unit 4	Principles of flower arrangements <ul style="list-style-type: none"><li>➤ Design and balance</li><li>➤ Arrangement, scale and rhythm</li><li>➤ Emphasis (focal point), harmony and unity</li></ul>

## **Course II Mushroom Cultivation Course Code RJBOTCO2**

Learning Outcomes: On completion of the course the student will be able to

- Identify edible and non edible mushrooms also educate others to identify poisonous and non poisonous mushrooms.
- Explore possibilities of starting their own mushroom cultivation unit
- Utilise Agro waste for mushroom cultivation

Course II	Mushroom cultivation Course Code-RJBOTCO2
Unit I	Introduction, history, Nutritional and medicinal value of edible mushrooms
Unit 2	Cultivation Technology and factors affecting the mushroom bed preparation
Unit 3	Storage and nutrition
Unit 4	Preparation of food and flavours from mushroom

### Course III Miniature Gardens Course Code-RJBOTCO3

Learning Outcomes: At the end of this course students will be able to

- . Design garden in limited space
- Indoor plants for air purification and providing ambience
- Vertical gardens and terrariums
- Grow organic herbs for consumption

Course III	Miniature gardens Course Code-RJBOTCO3
Unit 1	Scope and objectives of gardening and Style of gardens: Formal, Informal
Unit 2	Principles and making of Terrarium and Kokedama
Unit 3	Importance of layout and principles in kitchen and balcony garden, composting and microgreens
Unit 4	Gardening management operations: - soil laying, manuring, watering, management of pests and diseases with complete cure.

## Course IV Post-harvest Technology Course Code RJBOTCO4

Learning Outcomes: At the end of the course students will be able to do

- Develop plan for processing agriculture produce
- Make jam, jelly, sauce, pickle and preserve food for their own consumption without preservatives
- Start their own business

Course IV	Post-harvest technology Course Code-RJBOTCO4
Unit 1	Introduction to post harvest technology of agricultural produce, Status of Production, Losses, Need, Scope and Importance
Unit 2	Introduction, importance of drying, principles of drying and factors affecting drying, types of drying methods i.e. sun drying & artificial drying
Unit 3	Introduction, need and importance, general principles of storage. Temperature and moisture changes during storage i.e. influence of moisture content, relative humidity, temperature, fungi etc. on stored product.
Unit 4	Introduction to the storage of fruits and vegetables. Need and importance of storage. Principle of storage of fruits and vegetables. Recommended storage operation conditions for some important fruits and vegetables and their storage life. Use of preservative MIC analysis.

**Course 5: Preservation techniques for plants****Course Code RJBOTC05**

Learning Outcomes: At the end of the course students will be able to

- Preserve specimens for practical's in schools and colleges
- Identify plant material using herbarium specimens as reference material
- Develop techniques for understanding the phylogeny of plants

Course V	Preservation techniques for plants	Course Code-RJBOTC05
Unit 1	Introduction of specimens, targeting collection locations and date with permits, study of types of pressed, dried and wet plant	
Unit 2	Herbarium for algae with collection, cleaning, pressing, mounting, storage and conservation with all details	
Unit 3	Herbarium for Pteridophytes and Flowering plant with collection, cleaning, pressing, mounting, drying, storage and conservation with all details	
Unit 4	Key to use of Herbarium details; operation and maintenance importance	

## Course VI Plant tissue culture Course Code RJBOTC06

Learning outcome: Students will be able to

- Propagate plants by using in vitro techniques
- Will be able to apply this technique for research in various areas
- Skills required for employability in industry involved in mass propagation of plants using this technique

Course VI	Plant tissue culture	Course Code-RJBOTC06
Unit 1	History, types of tissue culture, sterilization techniques, media preparation	
Unit 2	Seed: Structure and types - Seed dormancy; causes and methods of breaking dormancy	
Unit 3	Micropropagation of explant and study of hardening stages	
Unit 4	Lab visit and report writing	

## Course VII : Separation techniques for Phytochemicals Course Code-RJBOTC07

Learning Outcomes: Students will be able to do

- Handle instruments like centrifuge, colorimeter, Spectrophotometer
- Apply the knowledge in the area of Natural products
- Purify value added products from plants and plant parts.

Course VII	Separation techniques for phytochemicals. Course Code-RJBOTC07
Unit 1	Centrifugation : importance of centrifugal force and gravity, gradient solution making, high speed refrigerated centrifugation for denaturing entity
Unit 2	Column chromatography: importance of porosity, mass and charge of matrix, affinity and retention time, study of its applications in purification and HPLC
Unit 3	Paper and Thin Layer Chromatography techniques :- mobile and stationary phase importance, preliminary screening of secondary metabolites in class of alkaloids, glycosides, polyphenols, terpenoids and steroids with Rf value calculation
Unit 4	Electrophoresis techniques: principles of electrophoresis, native and SDS importance, study of gel matrix for targeted specific mass and charge compounds with troubleshooting and interpretation of bands.

### Course VIII: Intellectual Property Rights Course Code RJBOTC08

Learning outcomes: On completion of the course students will be able to:

- Understand the concept of IPR
- Differentiate between various agreements
- Examine issues related to IPR
- Work with a Patent firm

Course VIII	Intellectual Property Right	Course Code-RJBOTC08
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Unit 1	Introduction to intellectual property right (IPR)  Concept and kinds. Economic importance. IPR in India and world	
Unit 2	Patents Objectives, Rights, Patent Act 1970 and its amendments.	
Unit 3	Information Technology Related Intellectual Property Rights;  Computer Software and Intellectual Property	
Unit 4	Protection of traditional knowledge and objective.	



## Course IX Research Methodology Course Code RJBOTC09

Learning outcomes: After completion of the course student will be able to

- Formulate a research proposal
- Do project work in a structured manner
- Will be able to initiate independent research work

Course IX	Research methodology Course Code-RJBOTC09
Unit 1	Hypothesis making with detailed literature work and formation of header best suited for hypothesis
Unit 2	Preplan and conduct of experiment with all ethical standards
Unit 3	Data collection and analysis (record keeping, application of biostats and graphical representation)
Unit 4	Data interpretation and expected outcome with application and use