Programme	BS Botany	Course Code	BOT-411	Credit Hours	3(3+0)
Course Title	Economic And Industrial Botany				

Introduction

This course is designed to explore the diverse and significant roles that plants play in various industries, including pharmaceuticals, textiles, food and beverages, bioenergy, chemicals, construction, horticulture, and environmental applications. Students will learn about the economic value of plants, their applications in different sectors, and the sustainable management of plant resources. This course combines historical perspectives, practical applications, and current trends to provide a comprehensive understanding of the industrial and economic significance of plants.

Learning Outcomes

On the completion of the course, the students will be able to:

- Define and explain the scope and significance of economic and industrial botany.
- Identify and understand the role of plants in the production of pharmaceuticals and medicines.
- Analyze the significance and applications of fiber-producing plants in the textile industry.
- Evaluate the importance of plants in the food and beverage industries and understand relevant agricultural practices.
- Assess the role of plants in bioenergy and biofuel production, considering sustainability and environmental impacts.
- Describe the production and applications of plant-derived chemicals and bioproducts.
- Understand the economic uses of timber-producing trees.
- Apply knowledge of plant-based construction materials and sustainable building practices.
- Recognize the economic value of ornamental plants and understand industry trends.
- Implement knowledge of plants in environmental applications such as phytoremediation and soil conservation.
- Understand and navigate the regulations and ethical considerations in the management of industrial plant resources.
- Identify emerging trends and future directions in the field of economic and industrial botany.

Course Contents

- Introduction to Economic and Industrial Botany
- Plant-Derived Pharmaceuticals and Medicines
- Plant Fibers and Textiles; Applications in Textiles, Composites, and Paper Industries
- Food and Beverage Industries; Plants as Sources of Food and Beverages
- Plant as a source of bioenergy (e.g., biofuels, biomass).
- Plant-Derived Chemicals and Bioproducts
- Plant-Based Construction Materials
- Horticultural and Ornamental Plants
- Environmental Applications of Plants
- Ethical considerations in sustainable plant resource management.
- Case studies of successful plant-based industries.
- Current and Future trends in economic and industrial plant applications.
- Techniques and strategies for improving crop traits relevant to industry

Textbooks and Reading Material

1. Balick, M. J., & Cox, P. A. (2020). *Plants, people, and culture: the science of ethnobotany*. Garland Science.
2. Boulger, G. S. (1889). *The Uses of Plants: a Manual of Economic Botany with Special Reference to Vegetable Products Introduced During the Last Fifty Years.* Cambridge University Press
3. Cotton, C. M. (1996). *Ethnobotany: principles and applications* (pp. ix+-424). CABI Databases
4. Kochhar, S. L. (2016). *Economic botany*. Cambridge University Press.
5. Levetin, E., & McMahon, K. (1996). *Plants and society* (pp. xix+-441). CABI Databases
6. Martin, G. J. (2010). *Ethnobotany: a methods manual*. Routledge. Springer, NY.
7. Ody, P. (2002). *Essential Guide to Natural Home Remedies*. Kyle Cathie.
8. Verma, V. (2009). *Textbook of economic botany*. Ane Books Pvt Ltd.

Teaching Learning Strategies

- Lectures
- Group Discussion
- Laboratory work
- Seminar/ Workshop

Assignments: Types and Number with Calendar

- Lecture Based Examination (Objective and Subjective)
- Assignments
- Class discussion
- Quiz
- Tests