

16BT102 BIOPRODUCTS AND BIOENTREPRENEURSHIP

Hours Per Week :

L	T	P	C
3	1	-	4



Source:
Prof. S. Krupanidhi, HoD, BT

Course Description and Objectives:

The course offers knowledge on various bio-products and their marketing. The objective of the course is to create awareness on a wide array of biologically derived products. In addition, it also encourages students to explore entrepreneurship in the arena of bioproducts.

Course Outcomes:

Upon completion of the course, the student will be able to

- CO1: Understand the importance of wide range Bio-products from renewable biological resources.
- CO2: Apply the knowledge for development of new Bio-products for food, nutraceuticals, and pharmaceuticals.
- CO3: Develop new methods for the production of Bio-products.
- CO4: Analyze and perceive green entrepreneurship and awareness on start-ups.
- CO5: Design small scale industry setup.

SKILLS:

- ✓ *Evaluate the scope for bioentrepreneurship.*
- ✓ *Recycle and reuse biowaste.*
- ✓ *Design small scale industry setup.*
- ✓ *Analyze bioproducts market trend.*

UNIT - 1

L-9, T-3

INTRODUCTION TO BIOPRODUCTS: Definition of bioproducts; Categories of bioproducts; Importance of bioproducts; Bioproducts industry - strategies and action plans, global trends and current situation; Bioproducts used for decoration; Biofertilisers; Examples of clonal propagation of plants; Socio-economic and environmental impact of bioproducts.

UNIT - 2

L-9, T-3

ENERGY RELATED BIOPRODUCTS: Liquid fuels - ethanol and biodiesel; Carbon neutrality; Conversion mechanisms; Solid biomass for combustion to generate heat and power; Gaseous fuel such as biogas; Renewable energy opportunities for Indian entrepreneurs.

UNIT - 3

L-9, T-3

BIOMATERIALS: Bioplastics from plant oils and sugars; Biofoams and biorubber from plant oils and latex; Biocomposites manufactured from agricultural (e.g., hemp, flax, kenaf) and forestry; Biofibres.

UNIT - 4

L-9, T-3

BIOCHEMICALS: Industrial - basic and specific chemicals, resins, lubricants and solvents; Pharmaceuticals - examples of monoclonal therapeutic antibodies, interleukins, enzymes (therapeutic and detergent), hormones and vaccines; Antibiotics; Omega 3 fatty acids; Biocosmetics - soaps, body creams and lotions; Biorepellents - case study; Trichoderma.

UNIT - 5

L-9, T-3

ENTREPRENEURSHIP RELATED TO BIOPRODUCTS: Entrepreneurship ecosystem and bioeconomy; Perception and analysis of green entrepreneurship ecosystem by its stakeholders; Green entrepreneurship - case studies; Bioproducts manufacturers and suppliers in India.

TEXT BOOKS :

1. N.T. Dunford, "Food and industrial bioproducts and bioprocessing", Wiley-Blackwell publishers, 2012.
2. J.C. Philp and K.C. Pavanan, "Perspectives- bio-based production in a bioeconomy", Asian Biotechnology and Development Review, Vol. 15, No.2, pp 81-88, 2012.

Reference Books :

1. J. W. Lee, "Advanced Biofuels and Bioproducts", Springer New York, 2013.
2. C. T. Hou and J.F. Shaw, "Biocatalysis and Bioenergy", Wiley publishers, 2008.

ACTIVITIES:

- *Models on renewable energy-biomass, biofuels, biogas.*
- *Prepare vermicompost.*
- *Case studies on green entrepreneurship.*