

Course Code	Course Name	Credits
26ZY602	HONEYBEES AND BEE PRODUCTS	04

Course Objectives

- To understand the biology, behavior, and classification of honey bees.
- To study the principles and practices of apiculture and colony management.
- To gain knowledge about bee products and their economic importance.
- To learn methods of harvesting, processing, and marketing bee products.
- To develop awareness about the role of bees in pollination and biodiversity conservation.

Learning Outcomes

- Explain the morphology, life cycle, and social organization of honey bees.
- Demonstrate knowledge of modern beekeeping techniques and hive management.
- Identify different bee products and their nutritional and medicinal value.
- Analyze the role of honey bees in crop pollination and ecosystem sustainability.
- Apply practical skills in honey extraction, processing, and disease management.

Unit 1 – Biology and Diversity of Honey Bees (12 Hrs.)

History, scope, and importance of apiculture; classification and species diversity of honey bees; morphology and anatomy of honey bees; life cycle of queen, worker, and drone; social organization and division of labour; bee communication and behavior.

Unit 2 – Beekeeping and Apiary Management (12 Hrs.)

Types and construction of bee hives; apiary establishment and site selection; equipment used in beekeeping; seasonal management of bee colonies; queen rearing and colony multiplication; swarming, absconding, and migratory beekeeping.

Unit 3 - Bee Diseases, Pests, and Pollination (12 Hrs.)

Major diseases of honey bees; bacterial, fungal, viral, and protozoan infections; bee pests and predators; prevention and control measures; pollination biology and mechanisms; role of honey bees in agriculture and biodiversity conservation.

Unit 4 – Honey and Bee Products (12 Hrs.)

Honey: composition and nutritional value; honey extraction, processing, grading, and storage; bee wax: extraction and uses; royal jelly and bee pollen; propolis and bee venom; medicinal, cosmetic, and commercial importance of bee products.

Unit 5 - Commercial Apiculture and Entrepreneurship (12 Hrs.)

Economics of beekeeping; commercial honey production; packaging and marketing of bee products; value-added bee products; government schemes and financial support for apiculture; recent advances and sustainable practices in beekeeping.

Reference Books:

1. Mishra, R.C. (2008). Perspectives in Indian Apiculture. Agro Botanica.
2. Crane, E. (1990). Bees and Beekeeping: Science, Practice and World Resources. Cornell University Press.
3. Prost, P.J. (2012). Apiculture. Oxford and IBH Publishing Co.
4. Singh, S. (1962). Beekeeping in India. ICAR Publications.
5. Free, J.B. (1982). Bees and Mankind. George Allen and Unwin Publishers.

Websites and eLearning Sources:

<https://entnemdept.ufl.edu/creatures/misc/bees/bees.htm>
<https://www.biologydiscussion.com/apiculture>
<https://www.easybiologyclass.com/apiculture/>