Course Code	Course Name	Credits
26ZY112	AI TECHNOLOGIES IN ENTOMOLOGY	04

Course Objectives

- To understand the applications of artificial intelligence in entomology.
- To study AI tools used in insect identification and monitoring.
- To develop knowledge on smart pest management systems.
- To understand machine learning and data analytics in entomological research.
- To enhance awareness on technological innovations in insect science.

Learning Outcomes

- Explain the role of AI technologies in entomology.
- Identify smart tools used for insect monitoring and analysis.
- Demonstrate knowledge of AI-based pest management systems.
- Analyze entomological data using AI techniques.
- Apply AI technologies in insect research and pest control.

Unit 1 - Introduction to AI in Entomology (12 Hrs.)

Concept and scope of artificial intelligence; applications of AI in insect science; digital entomology; role of big data in entomological studies.

Unit 2 - AI-Based Insect Identification (12 Hrs.)

Image processing and computer vision; automated insect identification systems; machine learning in taxonomy; insect monitoring using smart sensors.

Unit 3 - Smart Pest Management (12 Hrs.)

AI applications in pest detection and forecasting; precision agriculture; automated pest surveillance systems; predictive models for pest outbreaks.

Unit 4 - Data Analytics in Entomology (12 Hrs.)

Entomological databases; statistical and machine learning tools; GIS and remote sensing in insect studies; climate change and insect distribution analysis.

Unit 5 - Future Trends and Applications (12 Hrs.)

Robotics and drones in pest management; AI in vector control; ethical and environmental issues; future prospects of AI technologies in entomology.

Reference Books:

1. Mishra, P. (2023). Artificial Intelligence in Agriculture and Entomology. Elsevier.
2. Pedigo, L.P. (2019). Entomology and Pest Management. Waveland Press.
3. Chapman, R.F. (2018). The Insects: Structure and Function. Cambridge University Press.
4. Kumar, A. (2022). AI Applications in Biological Sciences. Springer.
5. Eastman, J.R. (2020). GIS and Remote Sensing Applications. Clark Labs.

Websites and eLearning Sources:

1. https://www.icar.org.in/
2. https://www.fao.org/
3. https://www.ncbi.nlm.nih.gov/