

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
IBRAHIMBAGH, HYDERABAD-31
Department of Computer Science and Engineering
Stream-Based Open Elective Courses offered by CSE
(ECE, EEE, Mech, Civil)

Overview

The stream-based open elective offered by Computer Science and Engineering (CSE) provides a structured progression in Artificial Intelligence and Machine Learning. Beginning with Python programming, students gradually build mathematical foundations, understand AI concepts, and finally develop machine learning models using real-world datasets. The curriculum is designed to enhance computational thinking, analytical ability, and practical problem-solving skills required in modern industries.

Why choose this stream? This stream bridges the gap between core engineering knowledge and modern intelligent technologies, enabling students to apply AI within their own discipline while preparing them for the rapidly evolving technology landscape.

The following four courses are offered under this stream:

- III Semester (2 Credits): Programming Essentials in Python
- IV Semester (3 Credits): Mathematical Computing for AI & ML with Python
- V Semester (3 Credits): Fundamentals of Artificial Intelligence
- VI Semester (3 Credits): Fundamentals of Machine Learning

Programming Essentials in Python

This course provides a strong foundation in computational thinking, software development, and Python programming through problem-solving and hands-on coding. Students develop the skills to build applications, automate tasks, analyze data, and prepare for advanced technologies such as Artificial Intelligence, Machine Learning, Data Science, and IoT.

Mathematical Computing for AI & ML with Python

Learn the mathematical concepts and Python-based computational techniques that power Artificial Intelligence and Machine Learning. Gain the ability to solve real-world data-driven problems and implement intelligent algorithms with confidence.

Fundamentals of Artificial Intelligence

Understand the key concepts, techniques, and applications of AI that enable systems to learn, reason, and make decisions. The course provides a strong foundation for developing AI-driven solutions to real-world problems across diverse domains.

Fundamentals of Machine Learning

Explore the principles and algorithms that enable computers to learn from data and make accurate predictions. Acquire the knowledge and practical skills required to build, evaluate, and apply machine learning models to real-world challenges.

Key Takeaways

After completing this stream, students will possess a strong foundation in AI and Machine Learning, confidence in developing intelligent applications using Python, and industry-ready skills aligned with emerging technologies such as Data Science, Deep Learning, Computer Vision, Natural Language Processing, and Generative AI. The stream prepares graduates for roles including AI Engineer, Machine Learning Engineer, Data Scientist, Data Analyst, and Software Developer.