

St. Xavier's College (Autonomous), Ahmedabad

Syllabus of Semester – III of the following departments under Faculty of
Data Science based on Undergraduate Curriculum Framework to be
implemented from the Academic Year 2026-27.

DEPARTMENT OF DATA SCIENCE

BSc. Artificial Intelligence and Machine Learning (Hons.)

Skill Enhancement Course-3: Introduction to Internet of Things (SWAYAM NPTEL)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Prerequisite(s) of the Course (if any)
	Lecture	Tutorial	Practical / Practice		
Introduction to Internet of Things	2	0		10 + 2 from a recognized board in any stream	Basic Programming knowledge

Course Objectives:

After successful completion of the course, students will be able to:

CO 1: To provide a strong foundation in Internet of Things (IoT) concepts, including sensing, actuation, networking, communication protocols, sensor networks, and machine-to-machine communication.

CO 2: To develop practical skills in designing and implementing IoT systems using Arduino, Raspberry Pi, Python programming, and the integration of sensors and actuators.

CO 3: To enable students to analyze and develop IoT-based solutions utilizing cloud, fog, and software-defined networking technologies for applications such as smart cities, smart homes, healthcare, agriculture, and industrial IoT.

Learning Outcomes:

At the end of the course, learners will be able to:

1. Explain the fundamental concepts, architecture, and components of Internet of Things (IoT) systems.
2. Describe networking technologies, communication protocols, and sensor networks used in IoT applications.
3. Integrate sensors and actuators with microcontroller and single-board computer platforms such as Arduino and Raspberry Pi.
4. Develop basic IoT applications using Python programming and embedded hardware platforms.

5. Apply cloud computing, fog computing, and software-defined networking concepts in IoT environments.
6. Analyze IoT data handling and analytics techniques for decision-making and automation.
7. Design and implement IoT-based solutions for real-world applications such as smart homes, smart cities, healthcare, agriculture, and industrial automation.
8. Evaluate interoperability, scalability, and security considerations in IoT system design.

For more details about the course, please visit https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs161