

# Centre of Excellence (e-Yantra CoE)

## ITS Engineering College, Greater Noida

### Standard Operating Procedure (SOP)

#### 1. Objective of the Centre

The e-Yantra Centre of Excellence (CoE) at ITS Engineering College aims to equip students and faculty with practical skills in **Robotics, Embedded Systems, IoT, and Automation** through project-based learning.

The centre, established in collaboration with **IIT Bombay's e-Yantra initiative**, focuses on providing hands-on experience in designing, programming, and deploying real-world robotic and embedded applications. It fosters **innovation, problem-solving, research aptitude, and interdisciplinary learning**.

#### Key Objectives

1. To impart **hands-on knowledge** in robotics, embedded systems, IoT, and automation through project-based learning.
2. To develop **problem-solving and analytical skills** among students through real-world robotics challenges.
3. To encourage participation in **national-level competitions** like the e-Yantra Robotics Competition (eYRC) and e-Yantra Innovation Challenge.
4. To promote **interdisciplinary collaboration** among ECE, CSE, Mechanical, and Electrical engineering students.
5. To nurture **entrepreneurial and research initiatives** in robotics and automation domains.
6. To establish a strong **industry-academia interface** for internships, projects, and placements.
7. To support the development of **low-cost, innovative prototypes** for social and industrial applications.

### 3. Courses & Training Offered

Course / Workshop	Duration	Level	Key Focus Areas
Embedded Systems & Robotics Basics	4–6 weeks	Beginner	Microcontrollers, sensors, actuators, and programming fundamentals
IoT and Automation using Embedded Platforms	4–6 weeks	Intermediate	IoT architecture, communication protocols, automation concepts
Advanced Robotics Applications	6–8 weeks	Advanced	Control systems, real-time embedded design, robot navigation
Capstone Project (Robotics/IoT)	8–10 weeks	Project	Team-based projects integrating sensors, actuators, and IoT connectivity
Workshops / Hackathons / Competitions	1–3 days	All Levels	e-Yantra challenges, innovation bootcamps, robotics contests

### 4. Eligibility & Pre-requisites

The e-Yantra CoE is open to **B.Tech students** from **ECE, CSE, Mechanical**, and related branches.

Basic knowledge of **C/C++ or Python** programming is recommended, along with an interest in robotics and embedded systems.

### 5. Course Timeline & Roadmap

Year / Semester	Focus Area
1st Year	Introduction to embedded systems, sensors, and actuators
2nd Year	Programming microcontrollers and interfacing hardware
3rd Year	Robotics and IoT projects using Arduino / Raspberry Pi
4th Year	Industry-oriented projects and participation in e-Yantra Robotics Competition

## 6. Certifications & Recognition

Students are encouraged to participate in **national-level e-Yantra programs** such as:

- **e-Yantra Robotics Competition (eYRC)**
- **e-Yantra Innovation Challenge (eYIC)**

Upon successful completion of modules and projects, students receive **joint certificates issued by IIT Bombay's e-Yantra initiative and ITS Engineering College.**

## 7. Lab Activities & Guidelines

- Hands-on training sessions on embedded systems and robotics.
- Interfacing and control of sensors, actuators, and IoT devices.
- Mini and major projects focused on societal and industrial applications.
- Hackathons, competitions, and innovation challenges.
- Maintenance of project documentation and adherence to safety rules.

## Contact Information

**Faculty In-Charge:** Dr. Setu Garg

**Department:** Electronics and Communication Engineering (ECE)

**Email:** setu@its.edu.in

**Location:** e-Yantra Centre of Excellence, ITS Engineering College, Greater Noida