

**Title:** Robotics

**Eligibility:** Bachelor's degree in any Faculty

**Objectives:** To make students familiar with robotics

To develop design, assembling, testing and installation skill

To create manpower for working on robot

**Course Structure:**The course is equivalent to 4 credits. The course can be run in any of the foursemesters.

### **Syllabus:**

1. Fundamentals of Robotics (1 credit)  
Introduction and classification of robots, Basics of matrices, Rotations and transformations, Introduction to D-H parameters and its physical significance, Orientation of Gripper, Trajectory planning
2. Embedded C programming (1 credit)  
Introduction to Embedded C, C fundamentals, Control statements, Functions, Arrays, Pointers Programming
3. Robotics Sensors and Actuators (1 credit)  
Position Sensors, robot calibration by optical encoder, proximity sensors,  
  
Ultrasonic sensors, Force and Torque sensors, Touch and Slip sensors, Specifications and characteristics of Stepper motors, AC motors, DC motors and servo motors
4. Case Study: Developing and building a robot (1 credit)

**Methodology:** Lectures supplemented with case studies that may include visits.

**Assessment:** Final assessment by written and group discussion. Skill based assessment will be as per the case study.

