

1.	Title of the course	Robotics and Automation
2.	Course number	EE603L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE6023/8
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To understand the importance of robotics in scientific and industrial domains. To introduce mathematical aspects of robotics such as spatial transformations, kinematics, dynamics, trajectory generation, actuators and control.	
10.	Course Content: Introduction to robotics; Elements of robots; Kinematics of serial and parallel robots; Velocity and static analysis of robots; Dynamics of robots; Motion planning and control; Flexible manipulators; Wheeled mobile robots; Advanced concepts in robotics; Introduction to Cloud and Fog robotics; Basic concepts of industrial automation and communication protocols for PLC, DCS, SCADA systems; Introduction to Internet of Things, Protocols and real time applications.	
11.	Textbook(s): 1. Bruno S and Sciavicco L, <i>Robotics: Modelling, Planning and Control</i> , Springer (2009). 2. John J C, <i>Introduction to Robotics: Mechanics and Control</i> , Addison-Wesley (1989).	
12.	Reference(s): 1. Fu K S, Ralph G and Lee C S G, <i>Robotics: Control Sensing. Vision, and Intelligence</i> , Tata McGraw-Hill (1987). 2. Mukhopadhyay S, Sen S and Deb A K, <i>Industrial Instrumentation, Control and Automation</i> , Jaico (1999). 3. Rajkumar B and Dastjerdi A V, <i>Internet of Things: Principles and Paradigms</i> , Morgan Kaufmann (2016).	