Course Code and Title with L-T-P Structure : ME 534: Mechatronics (L-T-P: 3-0-0)
Programme : B.Tech.
Semester : Sixth
Course-offering Department : Mechanical Engineering

Syllabus

SN	Unit	Contents
1	Introduction to Mechatronics .	Introduction, Elements of Mechatronic system, Applications
2	Sensors and Transducers	Introduction, Performance terminology, Displacement-Position-Proximity sensors, Velocity, motion, force and pressure sensors, Temperature and light sensors, Selection of sensors.
3	Signal processing	Signal Conditioning Devices, Protection, conversion and pulse width modulation, Data conversion devices.
4	Microprocessors	Introduction, Functions of microprocessor, Elements of microprocessor, Introduction to microprocessor programming, Internal Architecture of 8085 Microprocessor.
5	Programmable logic controllers	Introduction, structure and functioning, programming a PLC.
6	Drives and mechanisms of an automated system	Electric motors, stepper and servo motors, Linear motion drives, Indexing Mechanisms.
7	Digital Logic	Logic gates, Boolean algebra, Karnaugh maps.
8	CNC technology and Robotics	CNC machines in drilling operations, industrial robotics

Evaluation Plan: Evaluation would be based upon the following:

Component	Marks	Time
Sessional Test - I	10	Assignment/written/quiz/seminar, etc
Mid-Semester Exam	30	90 minutes
Sessional Test - II	10	Assignment/written/quiz/seminar, etc
End-Semester Exam	50	2 hours
Total	100	

Textbook:

(a) W.Bolton,"Mechatronics: Electronic Control Systems in Mechanical and Electrical Engineering" , 3rd Edition, Pearson education,2007.

(b) David G. Alciatore, Michael B. Histand ," Introduction to mechatronics and measurement systems", 2nd Edition, McGraw-Hill Professional, 2002.

References:

(a) Robert H. Bishop "Mechatronics: An introduction" CRC Press, 2006.

(b) Nitaigour Premchand Mahalik, "Mechatronics", Tata McGraw-Hill, 2003.

Course Outcomes (COs)

CO1: Understand mechatronics system and its components

CO2: Identify the different types of sensors and actuators used in mechatronics systems

CO3: Understand the requirement of conditioning and conversion of the signals and protection of the components in a mechatronics system

CO4: Understand microprocessor and its architecture and know to program it according to requirement of the mechatronics system

CO5: Design and model a mechatronics system.