

**DEPARTMENT OF MECHANICAL ENGINEERING
SYLLABUS FOR B.E. VI-SEMESTER
BASICS OF MECHATRONICS (OPEN ELECTIVE -VI)**

Instruction : 1 Hrs /week	SEE Marks : 50	Course Code : OE610ME
Credits : 1	CIE Marks: : 30	Duration of SEE : 2 Hours

Course objectives	Course Outcomes
<p>The objectives of this course are to:</p> <ol style="list-style-type: none"> 1. identify the need for mechatronics and its applications 2. study various fluid power systems 3. access various electronic components and devices and design mechatronic systems 	<p>On completion of the course, the student will be able to:</p> <ol style="list-style-type: none"> 1. interpret the importance of mechatronics and elements involved 2. design various fluid power systems for mechatronics applications. 3. Study various industrial electronic devices and integrated circuits. 4. analyze various measurement systems and and to study micro controller based CNC machines.

UNIT – I

Introduction to mechanization & automation.

Concept of Mechatronics: Flow chart of mechatronics systems, Actuators and control system, Application in industries.

Introduction to drive mechanisms and electrical actuators: servo motors and stepper motors.

Introduction to fluid power systems: Industrial pneumatics and hydraulics, Merits of fluid power systems, Pneumatic and hydraulic elements and their symbols, Study of hydraulic control valves, pumps & accessories, Hydraulic circuits and electro – hydraulic circuits.

UNIT – II

Introduction to industrial electronic devices: Diodes, Transistors, Silicon controlled Rectifiers (SCR), Integrated Circuits (IC)

Measurement systems: sensors, digital-to-analog and analog-to-digital conversion.

Introduction to microprocessor & micro controller: Applications of mechatronics in the design of modern CNC machines.

Learning Resources:

1. W. Bolton, "Mechatronics", 3rd Ed., Pearson Education, India, 2007
2. HMT Limited, "Mechatronics, Tata Mc.Graw– Hill Publishing Company Limited; New Delhi, 1998.
3. Michael B Histan& David G. Alciatore, "Introduction to Mechatronics and Measurement systems", 4th Ed., Tata McGraw-Hill International edition, 2012