

1.	Title of the course	Mechatronic System Design
2.	Course number	ME217M
3.	Structure of credits (L-T-P-C)	2-0-2-3
4.	New course/modification to	Modified with ME403M/MECHATRONICS
5.	To be offered by	Mechanical Engineering
6.	Proposed by	THIYAGARAJAN R
7.	Prerequisite	None
8.	Course Objective(s): To analyze the strategic approaches in the selection and integration of the critical components of a mechatronic system such as the sensors, actuators and controllers. To illustrate the mechatronic system design process, comprehending the strengths and constraints of each component utilized in the system. To gain practical experience in applying acquired knowledge towards the realization of a mechatronic system.	
9.	Course Content: Elements of mechatronic system; Measurement systems and design process; Sensors and transducers: principle and selection of displacement, position, proximity, speed, acceleration, flow, temperature sensors; Actuators: rotary actuators, linear actuators, drives, pneumatics and hydraulics; Controllers: microcontrollers, digital and analog interfaces; Signal conditioning: logic gates, operational amplifiers, filters, converters, power conversion, regulation and distribution interfaces, data acquisition; Communication: serial, parallel, inter-integrated circuit, data packaging; Course project: embedded programming, virtual instrumentation, integration of sensors, actuators and controllers to design and implement a mechatronic system.	
10.	Textbook(s): 1. Bolton W, Mechatronics: Electronic Control Systems in Mechanical and Electrical Engineering, 7th Edition, Pearson (2018). 2. Alcaiatore D G, Introduction to Mechatronics and Measuring Systems, 5th Edition, McGraw Hill Education (2019).	
11.	Reference(s): 1. Bishop R H, The Mechatronics Handbook, 2nd Edition, CRC Press (2018).	