

BMEE330P	Microcontrollers and Interfacing Lab	L	T	P	C
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Pre-requisite		Syllabus version			
		1.0			
Course Objectives					
1. To expose the students to fundamentals of Microcontrollers.					
2. To understand the functions of microcontroller programming and interfacing.					
3. To enable the students to design appropriate microcontroller-based systems.					
Course Outcomes					
At the end of the course, the student will be able to					
1. Demonstrate and interface microcontroller with sensors and actuators.					
2. Develop speed control techniques using microcontroller.					
3. Construct the simulation model using control system tool box.					
Indicative List of Experiments					
1	Study of embedded systems using microcontrollers and its architectural features.				
2	Push button, Keypad and Display Interfacing with microcontroller.				
3	Programming Traffic Light Control using microcontroller.				
4	Interfacing Ultrasonic Sensor with microcontroller.				
5	Open loop Speed and direction control of a DC motor using microcontroller.				
6	Closed loop Speed control of a DC motor based on PID Controller using microcontroller.				
7	Interfacing Stepper motor with microcontroller.				
8	Microcontroller Interfacing and Data transmission using RF/Bluetooth/WIFI.				
9	Development of a line following robot.				
10	Development of IoT enabled data transmission from sensors.				
11	Creating linear models of your control system using transfer function, state-space, and other representations using MATLAB Control System toolbox.				
12	Interface and visualize system behaviour in the time domain and frequency domain using MATLAB control system toolbox.				
Total Laboratory Hours					30 hours
Text Book(s)					
1.	Nagrath I.J., and Gopal M., Control Systems Engineering, 2017, 6 th edition New Age International Publishers.				
2.	K. Ogata, Modern Control Engineering, 2015, 5 th Edition, Prentice Hall of India Pvt. Ltd.				
3.	Lab Manual prepared by course faculty members.				
Reference Books					
1.	Norman S Nise, Control Systems Engineering, 2018, 7 th edition John Wiley and Sons, Inc				
2.	Benjamin C. Ku and Farid Golnaraghi, “Automatic Control Systems”, 2017, 10 th edition McGraw-Hill Education.				
Mode of assessment: Viva-voce examination, Lab performance & FAT					
Recommended by Board of Studies			19-07-2022		
Approved by Academic Council			No. 67	Date	08-08-2022