

1.	Title of the course	Embedded Systems
2.	Course number	EE521M
3.	Structure of credits	2-0-2-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5035/11
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To introduce the basic principles of design and development of embedded systems in order to produce highly maintainable and robust systems.	
10.	Course Content: Introduction; Embedded microcontroller cores, embedded memories; Technological aspects: interfacing between analog and digital blocks, signal conditioning, digital signal processing, sub-system interfacing, interfacing with external systems, user interfacing; Design trade-offs due to process compatibility: thermal considerations; Software aspects of embedded systems: real time programming languages and operating systems for embedded systems. Laboratory: Programming Exercises with Microprocessors and Microcontroller Controller kits; Interfacing experiments with i/o ports, timers, ADC-DAC, stepper motor interface; Simple applications of embedded processors in signal processing, real time control and consumer electronics; Exposure to software development platforms.	
11.	Textbook(s): 1. Simon D, <i>An Embedded Software Primer</i> , 1st Edition, Pearson (2000). 2. Wolf W, <i>Computers as Components : Principles of Embedded Computer System Design</i> , 2nd Edition, Elsevier (2005).	
12.	Reference(s): 1. Ayala K J, <i>The 8051 Microcontroller: Architecture, Programming, and Applications</i> , 2nd Edition, Delmar Cengage Learning (1996). 2. Ganssle J, <i>The Art of Designing Embedded Systems</i> , 2nd Edition, Newnes (2008). 3. Valvano J M, <i>Embedded Microcomputer System: Real Time Interfacing</i> , 3rd Edition, Brooks (2000).	