SEMESTER II

Course Code: ELE-504
Course Title: EMBEDDED SYSTEMS DESIGNS
Number of Credits: 04 **Total Hours: 60** **Total Marks: 100**
Effective from AY: 2022-23
Prerequisites for the course

Should have studied microprocessor and C programming at graduate level		
Objectives of Course		
This course is intended to: • Introduce with Architectures of Microcontroller and its programming with Interfacing various Interfaces is discussed in depth in this paper. • Programming in assembly as well as in C for 8/16/32 bit controller		
Course Content		
Unit I	**Introduction to Controller Architecture**	**5 Hours**
Computer Architecture, RISC/CISC and Princeton Architectures		
Unit II	**Embedded system**	**5**
Definition, Basic Block, Designing of System, Applications		
Unit III	8-bit Micro controllers	**20**
Introduction to various 8-Bit microcontroller, 8051 features, Architecture , Memory organization, Instruction set, Interrupts, Timer/counter, LED, Switches, ADC, DAC, LCD Interfacing, Programming in Assembly and C,		
Unit IV	**16 bit microcontroller**	**15**
PIC controller Introduction, Architecture, Instruction set, Peripheral interfaces: LED, LCD, Serial RS232,Programming in C		
Unit V	**32-bit Microcontroller**	**15**
ARM architecture, THUMB/ARM instruction, ARM Exception Handling, Timers/Counters, UART, SPI, PWM, WDT, Input Capture, Output Compare Modes, I2C , Instruction set, Programming in Assembly and C.		
Pedagogy		
Lectures/Experiential Learning		
Course Outcome		
The students will: ● Students will learn the architecture of 8051,PIC and ARM . ● students will write an assembly and C program for 8051,PIC and ARM . ● students will write an assembly and C program for ● Students will be able to develop their own embedded platform using 8051, PIC and ARM		
References/Readings		
1. Jivan Parab etal., Exploring C for microcontroller (Springer 2007)		

2. Lipovski G. J. Single and multiple Chip Microcontroller interfacing. Prentice Hall, USA 1998.
3. Beginning Android 4 Application Development
4. Professional Android 4 Application Development
Learning Android Game Programming : A Hands-On Guide to Building Your First Android Game 1st Edition

5 .Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand,StamatisKarnouskos, David Boyle, "From Machine-to-Machine to theInternet of Things: Introduction to a New Age of Intelligence", 1st
Edition, Academic Press, 2014.

6. Bernd Scholz-Reiter, Florian Michahelles, "Architecting the Internet ofThings", ISBN 978-3-642-19156-5 e-ISBN 978-3-642-19157-2,
Springer

7. Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-onApproach)", 1st Edition, VPT, 2014.