EMBEDDED SYSTEMS

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per sem	Per week	Per sem	Per week	Per sem	
III		ELECTIVE III	5	75	5	75	0	0	5

COURSE OBJECTIVE

- To introduce the Building Blocks of Embedded System, Educate in Various Embedded Development Strategies, Bus Communication in processors, Input/output interfacing, knowledge in Various processor schedulingalgorithms.

COURSE OUTCOME

On successful completion of the course, students will be ableto

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Needs for Embedded system	K2
CO2	Develop and evaluate Embedded system	K4
CO3	Understand about Memory organization and interfacing	K2
CO4	Understand the Concepts of peripherals and interfacing of sensors	K2
CO5	Describe the architecture and programming of processor	K1

Knowledge Level – K1-Remember, K2- Understand, K3-Apply,K4-
Analyze

MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	S	M	M	S
CO2	S	S	S	S	L	M
CO3	S	S	S	S	L	S
CO4	S	S	S	M	S	S
CO5	S	S	S	S	S	S

S- Strong; M- Medium; L- Low

UNIT – I INTRODUCTION TOEMBEDDEDSYSTEMS   15 Hours

Embedded system model – Embedded standards – Block diagrams – Powering the hardware Embedded board using von Neuman model – Embedded processors: ISA architecture models – Application specific ISA models – 8051 Microcontroller –General purpose ISA models – General architecture – Instruction set and Assembly programs

UNIT- IIPROCESSORHARDWARE   15 Hours

Internal Processor Design: ALU – Registers – Control unit – Clock – On Chip Memory – Processor I/O – Interrupts – Processor buses – Processor performance – Board memory: ROM – RAM – Cache – Auxiliary memory – Memory management – Memory performance – Board buses: Arbitration and timing – PCI bus example – Bus performance.

UNIT - III MEMORYAND INTERFACE   12 Hours

Memory organization and interfacing - I/O devices and interfacing Counters and Timers - Serial data communication – Interrupts – Interfacing LCD Display – Keypad Interfacing – Generation of Gate signals for Converters and Inverters – Motor Control .

UNIT – IV SOFTWARE AND ISSUESOFSOFTWARE   16hours

Middleware and applications: PPP – IP middleware – UDP – Java. Application layer: FTP client – SMTP – HTTP server and client – Design and development: Architectural patterns and Reference models – Creating the architectural structures – Documenting the architecture – Analyzing and evaluating the architecture – Debugging, Testing, and Maintaining.

UNIT-V PROCESSORSANDRTOS   18 hours

Introduction to basic concepts of RTOS – Task, process & threads, interrupt routines in RTOS

–   Multiprocessing and Multitasking – Preemptive and non preemptive scheduling–Task communication shared memory – Message passing – Inter process Communication – Synchronization between processes –Semaphores.

Distribution of Marks: Theory 80% and Applications:20%
TEXTBOOKS

S. NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Jean J. Labrosse	Embedded Systems Building Blocks	Paul Temme	2011

REFERENCE BOOKS

S. NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Tammy Noergaard	Embedded system architecture	Elsevier	2006
2	Muhammad Ali Mazidi	PIC Microcontroller an Embedded Systems using Assembly and C for PIC18	Pearson Education	2008
2	Muhammad Ali Mazidi	The 8051 Microcontroller and Embedded systems	Pearson Education	2008
3	Elecia White	Making Embedded Systems: Design Patterns for Great Software	O'Reilly Publishers	2011
4	Jack Ganssle	The Art of Designing Embedded Systems	Elsevier Publishers	1999
5	Michael Barr	Programming Embedded Systems	O'Reilly Publishers	1999
6	Phil Koopman	Better Embedded System Software	Drumnadrochit Education	2010
7	David E. Simon	An Embedded Software Primer	Addison-Wesley	1999
8	Daniele Lacamera	Embedded Systems Architecture	Packt Publishers	2018

WEB RESOURCES
1. https://www.enggedu.com
2. https://www.nptel.in

TEACHING METHODOLOGY
- Power pointpresentation
- Seminar bystudents
- Assignment tostudents
- Lecture throughvideo.

SYLLABUS DESIGNER
- Mrs.G.SANGEETHA LAKSHMI, Assistant professor & HOD, Dept of Computer Science & Applications
- Mrs. R SIVAGAMI, Assistant professor, Dept of Computer Science & Applications