CS312: Embedded Systems	L	T	P	
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Course Objective: To introduce fundamentals of embedded systems and programming fundamentals and microcontroller, concepts of program development and object Oriented Programming and Field programmable gate array (FPGA) using digital circuits and systems.

S. No.	Course Outcomes (CO)
CO1	Understand the evolution, applications, and architectural diversity of embedded systems.
CO2	Apply embedded programming principles and instruction set architectures for effective software development.
CO3	Implement interrupt systems, I/O programming, and memory management using high-level programming languages.
CO4	Utilize FPGA technology for reconfigurable computing and address related hardware-software development issues.

CO5	Design and develop digital systems on FPGAs with a focus on fault tolerance and re-targetable compilation.
CO6	Explore specific applications and emerging trends in embedded systems.

S. No	Contents	Contact Hours
UNIT 1	Introduction Evolution of embedded systems &their applications, architectural diversity for embedded system development.	**6**
UNIT 2	Techniques and tools for embedded software development Embedded Programming principles, Instruction Set Architectures for embedded software development: arithmetic and logical, program control, string instructions, special or privileged instructions.	**10**
UNIT 3	Interrupt system, Input-output programming, Memory management, Using High level languages for embedded programming, structured and Object Oriented Programming.	**8**
UNIT 4	Re-configurable FPGA for embedded computing R-FPGA and hardware software development, issues in Reconfigurable computing, placement and scheduling techniques.	**8**
UNIT 5	Design of digital systems on FPGAs, fault tolerant design on FPGAs, Re-targetable assembling and compilation.	**8**
UNIT 6	Applications Specific applications,Emerging trends.	**8**
	Total	**48**