No	Information of IT-51043	
1	Unit name:	Embedded Systems
2	Code:	IT-51043
3	Classification:	Engineering subject
4	Credit value:	3
5	Semester/ Year Offered:	1/V
6	Pre-requisite:	Computer Architecture Taxonomy, Basic Programming Concepts
7	Mode of delivery:	Lecture, Practical, Tutorial
8	Assessment system and breakdown of marks: Practical: Tutorial:	30% 10%
	Mid-term/ final Examination	60%
9	Academic staff teaching unit:	Department of Information Technology Engineering
10	Course outcome of unit: In this course, students will be able (a) To memorize the difference between general purpose computer system and embedded system (b) To recognize the major steps in embedded system design process (c) To explain the input and output mechanisms in embedded system (d) To discuss the bus-based computer system using microprocessor, I/O devices and memory components (e) To write assembly language programming for ARM and C55x processors	
11	Synopsis of unit: The course introduces the embedded system design and explains the concepts of assembly language programming. The course covers the design and development of hardware and software components of an embedded system.There are examples, exercises and practicals at the end of the most chapters to enhance the book's usefulness in the classroom.	
12	Topic:	

	1	**Embedded Computing**
		- Complex Systems and Microprocessors
		- The Embedded System Design Process
		- Formalisms for System Design
		- Model Train Controller
	2	**Instruction Sets**
		- Computer Architecture Taxonomy
		- ARM Processor
		- TI C55x DSP
	3	**CPUs**
		- Programming Input and Output
		- Supervisor Mode, Exceptions, and Traps
		- Co-Processors
		- CPU Performance
		- CPU Power Consumption
		- Design Example: Data Compressor
	4	**Bus-Based Computer Systems**
		- The CPU Bus
		- Memory devices
		- I/O devices
		- Component Interfacing
		- Designing with Microprocessors
		- System-Level Performance Analysis
		- Design Example: Alarm Clock
	5	**Program Design and Analysis**
		- Components for Embedded Programs
		- Models of Programs
		- Assembly, Linking, and Loading
		- Basic Compilation Techniques
		- Program Optimization
		- Program-Level Performance Analysis
		- Software Performance Optimization
		- Program-Level Energy and Power Analysis and Optimization

	▪ Analysis and Optimization of Program Size
	▪ Program Validation and Testing
	▪ Software Modem
13	Main references: Principles of Embedded Computing System Design, Second Edition
14	Additional references: Embedded systems by Rajkamal, Second Edition