AC –
Item No. –

As Per NEP 2020

Tolani College of Commerce (Autonomous)

Knowledge is Supreme

Title of the Course: Introduction to Embedded Systems

Programme :B.Sc.(Information Technology) Semester-IV

Syllabus for 2 credit Course

From the academic year-2024-2025

Sr. No.	Heading	Particulars
1	**Description of the course :**	An embedded system is a computer system—a combination of a computer processor, computer memory, and input/output peripheral devices—that has a dedicated function within a larger mechanical or electronic system.
2	**Vertical :**	Minor
3	**Type :**	Theory and Practical
4	**Credit**:	2 credits (1 credit = Theory and 1 credit = Practical)
5	**Hours Allotted :**	30 Hours
6	**Marks Allotted**:	50Marks Continuous Evaluation =20 Semester End =30
7	**Course Objectives**: **1.**To learn basic techniques of algorithm analysis. **2.** Master the implementation of linked data structures such as linked lists and binary tree.	
8	**Course Outcomes**: **1.**Learners will gain deep understanding after the completion of the course, are expected to Implement abstract data types using arrays and linked list. **2.**Learners will be able to Apply the different linear data structures like stack and queue to various computing problems.	

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	Module 1: Introduction to embedded systems(15 hours)
	• Embedded Systems and general purpose ,computersystems, history, classifications, applications and purpose ofembedded systems • microprocessors and microcontrollers,RISC and CISC controllers, Big endian and Little endian processors,Application specific ICs, Programmable logic devices, COTS, sensors and actuators, communication interface ,embedded firmware, other system components. • Characteristics and quality attributes of embedded systems,operational and non-operational quality attributes
	Module 2: – Applications ,Hardware of Embedded Systems and 8051 Programming in C (15 hours)
	• Application specific –washing machine, domain specific –automotive • Memory map, i/o map, interrupt map, processor family,external peripherals ,memory – RAM , ROM, types of RAM and ROM, memory.testing,Flash memory,Peripherals, Control and Status Registers, Device Driver,Timer Driver - Watchdog Timers. • Data Types and time delay in 8051 C, I/O Programming,Logic operations ,Data conversion Programs.

11	**Reference Books:** **1)**Author**: Ashford Lee Edward** , Title: **Introduction to embedded systems ,** Publisher**:** PHI LEARNING PVT. LTD**,**Edition:2nd ,Year: **1 January 2019** 3)https://e-next.in/bsc-it/sem4/introduction-to-embedded-systems/	
12	**Internal Continuous Assessment: 20%**	**Semester End Examination : 30%**
13	**Continuous Evaluation through:**	Practical **Assessment**
14	**Format of Question Paper:** **Scheme of Evaluation Pattern** **Table 1A: Scheme of Continuous Evaluation (CE/Practical)** **Scheme of Evaluation Pattern**	

Sub-components	Maximum Marks	Conditions for passing
9) Practical exam	15	A learner must be present for each of the sub-components.
10) Journal and Viva	5	
Total	20	

Table 1B: Scheme of Semester End Examination (SEE) Evaluation
Question Paper Pattern for Semester End Examination (SEE)

Maximum Marks: 30 **Duration: I Hrs.**

Note: All questions are compulsory. Each question has an internal choice.

Question Number		Nature of Questions	Maximum Marks
5)	**Attempt any 3**		
	a)		15
	b)		
	c)		
	d)		
	e)		
6)	**Attempt any 3**		
	a)		15
	b)		
	c)		
	d)		
	e)		