



SWARNANDHRA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by
NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF ROBOTICS

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods/ Week	Academic Year	Date of commencement of Semester
23RB5T03	Microcontroller and Embedded system	V	ROBOTICS	5	2025-2026	07-07-2025

COURSE OUTCOMES

After completion of the course students can able to

CO1:	Examine the functions 8086, Microprocessor[K3]
CO2:	Describe the functions of the Microcontroller 8051. [K2]
CO3:	Discuss about devices and buses used in embedded systems. [K2]
CO4:	Demonstrate the Embedded System Architecture and basic embedded processor. [K2]
CO5:	Illustrate the programming and system control to perform a specific task, [K3]
CO6:	Illustrate the keyboard controller, analog to digital converters, real time clock. [K4]

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	CO 1: Examine the functions 8086, Microprocessor [K3]	UNIT-1: MICROPROCESSORS				
		1.1	Basic Microprocessor architecture,	T1, R2	1	Chalk & Talk,
		1.2	8086 Architecture,	T1, R2	1	
		1.3	Register Organization,	T1, R2	1	
		1.4	Pin Description Of 8086,	T1, R2	1	
		1.5	Memory Organization,	T1, R2	1	
		1.5	Memory Segmentation	T1, R2	1	
		1.6	Bus Deriving System	T1, R2	1	
		1.7	Minimum Mode Operation Mode Of 8086 And Timing Diagrams.,	T1, R2	1	
		1.8	Maximum Mode Operation Of 8086 And Timing Diagrams.,	T1, R2	1	
		1.9	Instructions 8086 Microprocessor	T1, R2	1	
		1.10	Instructions 8086 Microprocessor	T1, R2	1	
		1.11	Addressing Modes Of8086 Microprocessor	T1, R2	1	
		1.12	AddressingModes Of8086 Microprocessor	T1, R2	1	
		1.13	AddressingModes Of8086 Microprocessor	T1, R2	1	
	Class Test		1			
Total					15	



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II	CO2: Describe the functions of the Microcontroller 8051. [K2]	UNIT – 2:8051& Interfacing:				
		2.1	Features,	T2,R1	1	Chalk & Talk,
		2.2	Architecture	T2,R1	1	
		2.3	Hardware concepts,	T2,R1	1	
		2.4	Input/output ports,	T2,R1	1	
		2.5	memory organization,	T2,R1	1	
		2.6	Timer/ counter functions, ,	T2,R1	1	PPT Active Learning
		2.7	8051 Serial communication,	T2,R1	1	
		2.8	Serial communication modes, interrupts.	T2,R1	1	
		2.9	Instructions,	T2,R1	1	
		2.10	addressing modes,	T2,R1	1	
		2.11	8051 interfacing to ADC and DAC,	T2,R1	1	
		2.12	Stepper motor interfacing	T2,R1	1	
		2.13	Assembly language programming:	T2,R1	1	
			Class Test		1	
Total				14		

III	CO3: Discuss about devices and buses used in embedded systems. [K2]	UNIT – 3: INTRODUCTION TO EMBEDDED SYSTEMS				
		3.1	Definition Of Embedded System,	T2.R3	1	Chalk & Talk, PPT Tutorial
		3.2	Embedded Systems Vs. General Computing Systems,	T2.R3	1	
		3.3	History Of Embedded Systems,	T2.R3	1	
		3.4	Classification	T2.R3	1	
		3.5	Major Application Areas	T2.R3	1	
		3.6	, Purpose Of Embedded Systems,	T2.R3	1	
		3.7	Characteristics And Quality Attributes Of Embedded Systems,	T2.R3	1	
		3.8	Common Design Metrics	T2.R3	1	
		3.9	Processor Technology- General Purpose Processor,.	T2.R3	1	
		3.10	Application Specific Processor,	T2.R3	1	
		3.11	Single Purpose Processor	T2.R3	1	
			Class Test		1	
Total				12		

IV	CO 4: Demonstrate the Embedded System	UNIT – 4: EMBEDDED SYSTEM ARCHITECTURE				
		4.1	Von Neumann architecture	T1, T2	1	Chalk &
		4.2	Harvard Architecture,	T1, T2	1	
		4.3	Von Neumann V/S Harvard	T2.R1	1	



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	Architecture and basic embedded processor. [K2] CO 5: Illustrate the programming and system control to perform a specific task, [K3]		Architecture,			Talk, PPT Tutorial	
		4.4	Instruction Set Architecture,	T2,R1	1		
		4.4	CISC And RISC Instructions Set Architecture,	T2,R2	1		
		4.5	Basic Embedded Processor, Microcontroller Architecture,	T2,R2	1		
		4.6	CISC &RISC Examples:		1		
		4.7	8051,	T2,R1,R2	1		
		4.8	Arm	T2,R1,R2	1		
		4.9	DSP Processors.	T1, T2,R1	1		
			Class Test			1	
Total					10		
V	CO6: Illustrate the keyboard controller, analog to digital converters, real time clock. [K4]	UNIT – 5 : Instruction:					Chalk & Talk, PPT Tutorial
		5.1	Input,Output and Peripheral Devices	T1, R2	1		
		5.2	Timers And Counters,	T1, R2	1		
		5.3	Watchdog Timers, PWM	T1, R2	1		
		5.4	Interrupt Controllers,	T1, R2	1		
		5.5	Keyboard Controller,	T1, R2	1		
		5.6	Analog to Digital Converters	T1, T2	1		
		5.7	Real Time Clock.	T1, T2	1		
		5.8	Class Test	T1, T2	1		
Content beyond Syllabus (if needed)			Case Study of Embedded System		1		
Total					9		
CUMULATIVE PROPOSED PERIODS					60		
Text Books:							
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION						
1.	Advanced microprocessors and peripherals by K. M. Bhurchandi, A. K. Ray 3e						
2.	The 8051 Microcontrollers and Embedded systems Using Assembly and C, Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D.McKinlay; Pearson 2-Edition,2011.						
3.	Joseph Yiu's,The Definitive Guide to ARM Cortex-M3 and Cortex-M4 Processors, 3/e, Elsevier, 2014.						
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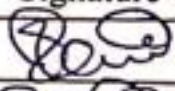
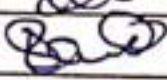
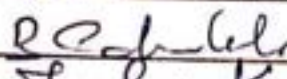
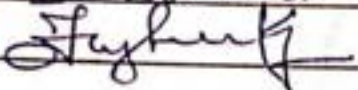
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Elsevier, 2014.

Web Details

1.	1. https://www.youtube.com/watch?v=SUusup7FfJo
2.	2. https://www.youtube.com/watch?v=y9RAhEfLfJs
3.	3. https://www.youtube.com/watch?v=MYyydWpZo60&list=PLgwJf8NK-2e49i6neo70aGtFLvKeZ3IQD
4.	4. https://www.youtube.com/watch?v=0xgvINDxXJI&list=PLbRMhDVUMngcJu5oUhgpYqtOn7Dm
5.	https://www.youtube.com/watch?v=JO4AEkOVF2M&list=PLrjkTql3jnm-lZMoUblxMCp0HgXvJ7ocx&index=1

		Name	Signature with Date
i.	Faculty	Mr.I.V. Ravi Kumar	
ii.	Course Coordinator	Mr.I.V. Ravi Kumar	
iii.	Module Coordinator	Mr.B.Mahesh Krishna	
iv.	Programme Coordinator	Dr. Francis Luther King M	




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