
	SRI VIDYA COLLEGE OF ENGINEERING & TECHNOLOGY COURSE PLAN (THEORY)	
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ACADEMIC YEAR: 2018-19

Subject Code	ME6702					L	T	P	C			
Subject Title	MECHATRONICS					3	0	0	3			
Year / Dept / Sem	IV / Mech / VII			Regulation Year								
Faculty Name / Desgn. / Dept	Mr. P. Jacob Annaraj / Assistant Professor / Mech Mr. Janakiraman / Assistant Professor / ECE Mr. Ebenezer Jebadurai / Assistant Professor / ECE											
Course Prerequisite	Basic Knowledge about Electronics											
Attach the copy of syllabus												
Course Objectives (CO)	CO1: To impart knowledge about the elements involved in mechatronics CO2: To understand the techniques involved in a mechatronics system CO3: Imparting knowledge about the selection of elements in mechatronics CO4: To acquire knowledge about microprocessors and microcontrollers. CO5: To apply the knowledge of electronics in mechanical systems CO6: To understand the emerging field of automation and robotics											
Expected Course Outcomes (ECO)	At the end of the course, the students should be able to: ECO1: Remember about the elements involved in mechatronics ECO2: Understand the techniques involved in a mechatronics system ECO3: Apply the knowledge in selection of elements in mechatronics ECO4: Aware about the functions of microprocessors and microcontrollers. ECO5: Integrate the knowledge of electronics in mechanical systems. ECO6: Understand and apply his knowledge in automation and robotics											
Mapping of CO & PO(Specify the PO's) - (Fill the col.s with the legend given below)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	B											
CO2		B,C	B,C,E	B					B			
CO3									B			
CO4	A									B		
CO5							B,E			C	A,E,	
CO6					B	B				B,		B
Bridging the Curriculum Gap (Additional Topics beyond syllabus/Seminars/Assignments)	BCG1: Basics of Electronics Devices and Circuits BCG2: Fundamentals of Microprocessors, Microcontrollers and programming BCG3: Application of Mechatronics systems in Automation, Robotics, etc...											

Related Website URLs	<p>W1: http://mechatronic.me/1-what-is-mechatronics</p> <p>W2: nptel.ac.in/courses/108107029/module9</p> <p>W3: https://en.wikipedia.org/wiki/Intel_8255</p> <p>W4: http://study.com/articles/Mechatronics</p> <p>W5: https://en.wikipedia.org/wiki/Mechatronics</p>
Related Video Course Materials (min. 3 no.s)	<p>V1: https://www.youtube.com/watch?v=xM531wRUw9A</p> <p>V2: http://engineering.nyu.edu/mechatronics/</p> <p>V3: https://www.youtube.com/watch?v=ZEboRtf-LoM</p> <p>V4: https://www.youtube.com/watch?v=mw4fl5mUB88</p> <p>V5: https://www.youtube.com/watch?v=ws-OpxsMBfA</p>

S.No	Topic Name	Book – P. No	Teaching Aids	No of hrs	Cumulative hrs
UNIT I - INTRODUCTION					
1.	Introduction to Mechatronics	1-2	BB, LCD	2	2
2.	Systems – Concepts of Mechatronics approach	500-510	BB, LCD	2	4
3.	Need for Mechatronics – Emerging areas of Mechatronics	2	BB, LCD	1	5
4.	Classification of Mechatronics. Sensors and Transducers:	22	LCD	1	6
5.	Static and dynamic Characteristics of Sensor, Potentiometers – LVDT	23-28	LCD	2	8
6.	Capacitance sensors – Strain gauges – Eddy current sensor	23-28	LCD	2	10
7.	Hall effect sensor – Temperature sensors – Light sensors	39-54	LCD	2	12
UNIT II - 8085 MICROPROCESSOR AND 8051 MICROCONTROLLER					
8.	Introduction to Microprocessors	Notes, W2	LCD	1	13
9.	Architecture of 8085	Notes, W2	BB, LCD	3	16
10.	Pin Configuration – Addressing Modes	Notes	LCD	2	18
11.	Instruction set, Timing diagram of 8085	Notes	BB, LCD	2	20
12.	Concepts of 8051 microcontroller – Block diagram,	Notes	BB, LCD	2	22
UNIT III - PROGRAMMABLE PERIPHERAL INTERFACE					
13.	Introduction to programmable peripheral interface	Notes, W3	BB, LCD	1	23
14.	Architecture of 8255, Keyboard interfacing, LED display	Notes, W3	BB, LCD	2	25
15.	interfacing, ADC and DAC interface	Notes	BB, LCD	2	27
16.	Temperature Control	Notes	BB, LCD	1	28

17.	Stepper Motor Control	Notes	BB, LCD	1	29
18.	Traffic Control interface	Notes	BB, LCD	1	30
UNIT IV - PROGRAMMABLE LOGIC CONTROLLER					
19.	Introduction to Programmable logic controller	440	BB, LCD	1	31
20.	Basic structure of PLC	440-443	BB, LCD	1	32
21.	Input and output processing	444-445	BB, LCD	1	33
22.	Programming – Mnemonics	445-451	BB, LCD	2	35
23.	Timers, counters and internal relays	452-457	BB, LCD	1	36
24.	Data handling – Selection of PLC.	460-462	LCD	1	37
UNIT V - ACTUATORS AND MECHATRONIC SYSTEM DESIGN					
25.	Types of Stepper and Servo motors – Construction – Working Principle – Advantages and Disadvantages	201-215	LCD	2	39
26.	Design process - stages of design process	3-4	BB, LCD	2	41
27.	Traditional and Mechatronics design concepts	500-510	BB, LCD	1	42
28.	Case studies of Mechatronics systems – Pick and place Robot	511-524	LCD	1	43
29.	Engine Management system – Automatic car park barrier.	511-524	LCD	2	45

	<i>Prepared by</i>	<i>Approved by</i>
Signature	Sd/-	Sd/-
Name	Mr. P. Jacob Annaraj	Prof. G. Baskaran
Designation	Assistant Professor / Mech	Professor & HOD (Mech)
Signed date	03.07.2018	03.07.2018

LEGEND:**METHODOLOGY TO MAP OBJECTIVE WITH OUTCOME**

Course outcomes are achieved through

- a. Suitable Analogies.
- b. Class room teaching.
- c. Assignments.
- d. Tutorials
- e. Weekly, monthly and model exams.
- f. Brain storming.
- g. Group discussion and role play.
- h. Seminars