

## Department of Mechanical Engineering

### Course Outcomes of all courses of B Tech 6<sup>th</sup> semester MECHATRONICS

On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
C311- Machine Design	C 311.1	<i>Develop</i> knowledge of basic considerations in machine design, Static & Fluctuating loads on components, Material codes( <b>Level 1,4</b> )
	C 311.2	<i>Understand design</i> of Cotter & Knuckle Joints, Keys, Couplings (mechanical components) ( <b>Level 1,5</b> )
	C 311.3	<i>Understand design</i> of Shafts, Design considerations in ASME codes, Clutches( <b>Level 1,5</b> )
	C 311.4	<i>Analyze and comprehend design</i> of Threaded Fasteners, Screw threads, Screw Jack & Power screws( <b>Level 1,2,4</b> )
	C 311.5	<i>Design</i> of different structural joints : Riveted joints( <b>Level 1</b> )

On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
C312- Industrial and Power Electronics	C312.1	<i>describe</i> the students will get knowledge of basic power electronic devices and how they differ from other electronic devices.. ( <b>Level 3,5</b> )
	C312.2	<i>express</i> to get the basic knowledge of inverter, cylo-converter, dual converter and choppers.. ( <b>Level 2, 5</b> )
	C312.3	<i>distinguish</i> the basic knowledge of heating and welding control is obtained. ( <b>Level 3,5</b> )
	C312.4	<i>compare</i> the knowledge of voltage stabilizer and UPS is obtained. ( <b>Level 4,5</b> )
	C312.5	<i>analyze</i> knowledge about voltage requirement for welding process.. ( <b>Level 2,3,5</b> )

On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
313- Digital Signal Processing and its Applications	C313.1	<b>understand</b> the fundamentals of discrete time signals and application of Fourier and Z transform with respect to Digital signal processing. (
	C313.2	<b>explain</b> the basics of digital filter design and the discrete Fourier transform. ( <b>Level 1,2</b> )
	C313.3	<b>analyze</b> and <b>synthesize</b> algorithms and systems that process discrete time signals with emphasis on realization and implementation. (
	C313.4	<b>distinguish</b> and <b>design</b> FIR and IIR filters, and realize the structures. ( <b>Level 2,5</b> )
	C313.5	<b>apply</b> signal processing to various areas such as speech and audio processing, image processing, biomedical signal processing, array



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On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
C314- Hydraulics and Pneumatics control	C314.1	Comprehend Different Fluid Power Systems and Applications <b>Level (2)</b>
	C314.2	Describe the Construction and Working of Pumps and Actuators, and Know About Their Performance Characteristics <b>Level (4)</b>
	C314.3	Comprehend and Analyze Hydraulic Circuits and Accumulators <b>Level (4)</b>
	C314.4	Describe the Construction and Working Principles of Different Types of Control Valves <b>Level (2)</b>
	C314.5	Understand Pneumatic Systems and Pneumatic Logic Gates (OR & AND) <b>Level (2)</b>

On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
C315 Entrepreneurship Developments	C315.1	<i>Describe</i> the history of Entrepreneurship development and the role of entrepreneurship in the economic development ( <b>Level 1,2,4</b> )
	C315.2	<i>Describe</i> the Forms of Ownerships ,types of entrepreneurship and the Entrepreneurship Development Cycle ( <b>Level 2,5</b> )
	C315.3	<i>Describe</i> the generation and evaluation of business ideas and the role of industrial bodies.( <b>Level 3,4</b> )
	C315.4	<i>Describe</i> the steps and processes involved in setting up a manufacturing unit and service unit and about the government policies. ( <b>Level 2</b> )
	C315.5	<i>Distinguish and describe</i> the success cases and opportunities in different economic sectors. ( <b>Level 6</b> )

On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
C316- Computer Aided Modeling & Analysis Lab	C316.1	<b>Demonstrate</b> working knowledge in Computer Aided Design methods and procedures. ( <b>Level 3</b> )
	C316.2	<b>Construct</b> solid modeling using 3D modeling standard software. ( <b>Level 6</b> )
	C316.3	<b>Describe</b> boundary conditions for structural, heat and fluid flow problems. ( <b>Level 2</b> )
	C316.4	<b>Solve</b> simple structural and heat problems using standard FEA software. ( <b>Level 3,4</b> )
	C316.5	<b>Solve</b> fluid flow problems using standard FEA software. ( <b>Level 3,4</b> )





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On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
<b>C317- Digital Signal Processing and its Applications Lab</b>	<b>C317.1</b>	To study the fundamentals of discrete time system analysis, digital filter design and the DFT. <b>Level (2)</b>
	<b>C317.2</b>	The students will understand the fundamentals of discrete time signals, systems and their properties. <b>Level (2)</b>
	<b>C317.3</b>	The students will understand the basics of digital filter design and the Discrete Fourier Transform. <b>Level (2)</b>
	<b>C317.4</b>	The mathematical problem solving ability of students get improved. <b>Level (3)</b>
	<b>C317.5</b>	The students will be motivated to apply signal processing to various areas such as speech and audio processing, image processing, biomedical signal processing, array signal processing etc. <b>Level (3)</b>

On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
<b>C318- Hydraulics and Pneumatics control Lab</b>	<b>C318.1</b>	To understand the working and construction of hydraulic and pneumatic components and basic circuits <b>Level: Understand (2)</b>
	<b>C318.2</b>	To control the speed and pressure of hydraulic and pneumatic cylinders using various valves <b>Level: Apply (3)</b>
	<b>C318.3</b>	To design and implement electro-hydraulic circuits for speed and pressure control and sequential operations using limit/proximity switches <b>Level: Create (6)</b>
	<b>C318.4</b>	To implement control mechanisms for pneumatic cylinders, including memory, time-dependent, and pressure-dependent controls <b>Level: Apply (3)</b>
	<b>C318.5</b>	To understand and apply pneumatic logic elements and specialized valves such as Quick Exhaust, Flow Control, and Time Delay valves <b>Level: Apply (3)</b>

On successful completion of this course, students should be able to

Course	COURSE OUTCOMES	
C319- Simulation Lab	<b>C319.1</b>	To provide insight into the working, analysis and design of basic circuits using Multisim. <b>Level:</b> Understand (2)
	<b>C319.2</b>	Student should be able to design and implement circuits like Half & Full Wave rectifier, multivibrator, op-amp, mixer circuit, integrator, etc. <b>Level:</b> Apply (3)
	<b>C319.3</b>	To understand the concept of Multisim simulation and all RC circuits. <b>Level:</b> Understand (2)
	<b>C319.4</b>	Student has knowledge about Multisim 11.0 with high frequency analysis. <b>Level:</b> Understand (2)
	<b>C319.5</b>	Students should be able to function effectively as an individual and in a team to accomplish the given task. <b>Level:</b> Apply (3)