Department of Mechanical Engineering

Course Outcomes of all courses of B Tech 4th semester MECHATRONICS

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

Course		COURSE OUTCOMES
C211- Kinematics of Machines	**C 211.1**	*define* kinematic elements, pairs, mechanism, *describe* mechanisms such as four bar mechanism and its inversions, *identify*, *interpret*, and *examine* for velocity for different mechanisms by relative velocity and instantaneous center methods. (**Level-1,3,4**)
	C 211.2	*synthesis* of mechanism, Pantograph, Lower pair mechanism, *identify*, *interpret*, and *examine* relative acceleration diagram, kliens construction, coroillis component of acceleration. (**Level-1,3,4,5**)
	C 211.3	*define, classify* cams and followers, and *construct* displacement diagram and cam profiles for SHM, Uniform velocity, uniform acceleration and retardation and Cycloidal motions. (**Level-1,3,5**)
	C 211.4	*classify* gear ,define gear terminology and law of gearing , *compare* involutes and cycloid teeth ,*describe* interference and undercutting of Involutes teeth, minimum number of teeth on pinion to avoid interference.
	C 211.5	*describe* various applications of friction, **analyse** pivot and collar friction, and thrust bearing, *compare* ratio of tensions for flat belt & V-belt, *describe* centrifugal tension, condition for maximum power transmission, *describe* absorption dynamometer, transmission dynamometer. (**Level-1,3,4**)

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

Course		COURSE OUTCOMES
C212- Microprocessor and Microcontroller	C212.1	**Understand** and **evaluate** the various elastic constants. **Level (5)**
	C212.2	**Understand** and **apply** the concept of stress and strain. **Level (3)**
	C212.3	**Understand** pure bending phenomenon on various cross-sections of a beam. **Level (2)**
	C212.4	Learn about statically indeterminate beams and be able to draw shear force, bending moment, and **calculate** slope and deflection. **Level (3)**
	C212.5	**Understand** the failure of a shaft due to torsion. **Level (2)**

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

Course		COURSE OUTCOMES
213- Modern Control Systems	C213.1	The students will gain knowledge about the architecture of a general-purpose microprocessor. **Level (2)**
	C213.2	The students will get basic knowledge of all types of microcontrollers. **Level** (2)
	C213.3	They will get the basic knowledge of programming techniques with the 8051 microcontroller. **Level** (2)
	C213.4	The basic concepts of embedded systems are known. **Level** (2)
	C213.5	The concept of interfacing devices with the 8051 is known. **Level** (2)

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

Course	COURSE OUTCOMES	
C214- Fluid Mechanics	**C214.1**	*Understand and Describe* the laws of fluid motion and its engineering application **(Level 1,2,3)**
	C214.2	*Classify & Analyze* various fluid flow situations of engineering interest **(Level 1,2,4,5)**
	C214.3	*Evaluate* the merits and demerits of application of principles to variety of fluid flow problems **(Level 1,2,5,6)**
	C214.4	*Design* or select equipments based on flow through pipelines or other conduits **(Level 1,2,3,5)**
	C214.5	*Interpret* the results and its physical significance **(Level 1,2,4,5,6)**

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

Course	COURSE OUTCOMES	
C215 Thermal Engineering	**C215.1**	The student will be able to analyze the second law. **Level (4)**
	C215.2	The student will be able to evaluate the performance of an internal combustion engine. **Level** (5)
	C215.3	The student will be able to understand the vapor and vapor power cycle and steam condenser. **Level** (2)
	C215.4	The student will be able to understand the refrigeration cycle and reciprocating air compressors. **Level** (2)
	C215.5	The student will be able to execute knowledge of solar energy to various devices. **Level** (3)

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Course	COURSE OUTCOMES	
C216- Kinematics of Machines Lab	**C216.1**	Analyze the jump phenomena of cam follower apparatus. **Level** (4)
	C216.2	Demonstrate the ability to draw displacement, velocity, and acceleration curves of cam motion. **Level** (3)
	C216.3	Evaluate the load carrying capacity of bearings using experimental methods. **Level** (5)
	C216.4	Calculate the coefficient of friction of bearings through experimental measurements. **Level** (3)
	C216.5	Analyze and calculate the frictional horsepower of bearings based on experimental data. **Level** (4)

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

Course	COURSE OUTCOMES	
C217- Microprocessor and Microcontroller Lab	**C217.1**	Develop and implement basic arithmetic operations using 8-bit microcontroller registers and memory. **Level (3)**
	C217.2	Program and execute 16-bit addition using registers of an Atmel 89C51 microcontroller. **Level** (3)
	C217.3	Program and execute 32-bit addition using registers of an Atmel 89C51 microcontroller. **Level** (3)
	C217.4	Convert binary numbers into decimal using Atmel 89C51 microcontroller registers. **Level** (4)
	C217.5	Transfer data between ROM and RAM using different methods on Atmel 89C51 microcontroller. **Level** (3)

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

Course	COURSE OUTCOMES	
C218- Fluid Mechanics Lab	**C218.1**	**Demonstrate** practical understanding of principles of buoyancy and flotation and **determine** meta-centric height. **(Level 3,5)**
	C218.2	**Verify** impulse momentum principle**(Level 5)**
	C218.3	**Demonstrate** practical understanding of the various terms in Bernoulli's equation and **verify** Bernoulli's theorem. **(Level 3,5)**
	C218.4	**Calibrate** flow measurement devices**(Level 3)**
	C218.5	**Demonstrate** practical understanding of Major and Minor Losses in pipe flow. **(Level 3)**

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

Course	COURSE OUTCOMES	
C219- Virtual Lab(Computer aided design and manufacturing Lab)	**C219.1**	Develop and validate computer programs for line or circle drawing algorithms. **Level** (3)
	C219.2	Implement and validate computer programs for geometric transformations such as translation, rotation, and scaling. **Level** (3)
	C219.3	Design and validate computer programs for simulating machine components or systems. **Level** (6)
	C219.4	Utilize and apply commands of 3-D modeling software for modeling and visualization. **Level** (3)
	C219.5	Create and validate solid models of machine components using advanced modeling software. **Level** (6)

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