#### ST.PETERS ENGINEERING COLLEGE

# DEPARTMENT OF MECHANICAL ENGINEERING

# Correlation between the Course outcomes and Program Outcomes A.Y. 2021-22

# <u>II YEAR II SEM</u>

COURS ECODE	COURSENAME	COURSE OUTCOMES							PRO OUT	GRA COM	M IES					
			1	2	3	4	5	6	7	8	9	10	11	12	Pso1	Pso2
		C221.1 Solve Linear Partial differential equations offirst and second order.	3	2	2											2
		C221.2 Associate the concepts of Fourier series expansion for even and odd functions.	2	1	1											1
1 520 00	AND STATISTICS	C221.3Apply the concepts of Fourier series in solvingboundary value problems.	3	2	2											
AS20-00 BS11	VARIABLES	C221.4 Discuss the Fourier transform, Fourier Sine and Cosine transform techniques.	2	1	1											1
		C221.5 Discuss the concepts of Z- Transformtechniques for discrete time systems.	2	1	1											1
		C221.6 Apply transforms techniques in modeling physical processes like Heat Conduction,	3	2	2	1										
		Communications systemsand Electromagnetic Theory.														
		Average	3	2	2	1										1
		C222.1Ability to describe the principles of kinematicpairs, chains and their classification.	3	2											3	2
		C222.2 Ability to explain the Degrees of Freedom,inversions, equivalent chains and planar mechanisms.	3	2	2										3	2
AS20-03	KINEMATIC S OF MACHINER Y	C222.3 Analyze the planar mechanisms for position, velocity and acceleration.	3	3	2										3	2
PC06		C222.4Construct planar four bar and slider crank mechanisms for specified kinematic conditions.	3		2										2	3
		C222.5Ability to draw the profiles of cams andfollowers for specified motions.	3	2											3	2
		C222.6Evaluate gear tooth geometry and select appropriategears for the required applications.	3		3										3	2
		Average	3	2.3	2.25										2.83	2.16

		C223.1. Understand working principles of an IC Engine. (Understand)	3	2			2			3	3
	THERMAL	C223.2. Analyze combustion in SI and CI engines. (Analysis)	3	2	2		2			3	3
AS20-03 PC07	ENGINEERING - I	C223.3Study performance of an IC Engine (Understand)	3	3						3	3
1007		C223.4. Understand working principles of Air- Compressors and Analyze Reciprocating Air- Compressors.(Analysis)	3	2			2			2	3
		C223.5. Understand working principles of Rotary air compressor and to analyze Centrifugal and Axial flow compressors . (Analysis)	3	2			2			3	
		C223.6. Understand the basic concepts of power and refrigeration cycles. Their efficiency and coefficients of performance. (Understand)	3	2						3	
		Average	3	2.2	2		2			2.8	3
		C224.1. Able to state the effect of fluid properties on a flow system.(Remember)	3							2	1
		C224.2. Able to describe continuity equation and identify type of fluid flow patterns.(Understand)	3							2	1
AS20-03 PC08		C224.3. Able to demonstrate boundary layer concepts in Fluid Flow Systems. (Apply)	2	3	2					3	3
	FLUID MECHANICS	C224.4. Able to analyze a variety of practical fluid flow and measuring devices and utilize Fluid Mechanics principles in design. (Analyze)	3	2						3	3
	AND HYDRAULIC MACHINES	C224.5. Able to select and analyze an appropriate turbine with reference to given situation inpower plants. (Understand)	2	3						3	3
		C224.6. Able to investigate performance parameters of a given Centrifugal and Reciprocatingpump. (Create)	2	2						3	3
		Average	2.5	2.5	2					2.67	2.34
AS20-03 ES07	INSTRUMENTATIO N AND CONTROL	C225.1. Identify various elements and their purpose in typical instruments (Remember)	3					2			1
	SYSTEMS	C225.2. Analysis of errors so as to determine correction factors for each instrument. (Analysis)	2					3		3	

		C225.3. Understand static and dynamic	1	2			3							1
		determine loading response time (Understand)												
		C225.4. Explain transducer regarding	1			2			3					1
		accuracy and loading time. (Understand)	-			-			Č					
		C225.5. Analyze the control system for control of position, temperature, acceleration & process control. (Analysis)			1			2		3				1
		C225.6. Analyze the measuring system for the measurement of Flow and liquid level. (Analysis)		3			2		1					
		Average	1	2.3	2	2	2.3	2.5	2	3			2	1
AS20-03 ES08	INSTRUMENT ATION AND	C226.1. Identify various elements and their purpose in typical instruments (Remember)	3								2			1
	CONTROL SYSTEMS LAB	C226.2. Analysis of errors so as to determine correction factors for each instrument. (Analysis)	2								3		3	
		C226.3. Understand static and dynamic characteristics of instrument and should be able to determine loading response time. (Understand)	1	2			3							
		C226.4. Explain transducer regarding accuracy and loading time. (Understand)	1			2			3					
		C226.5. Analyze the control system for control of position, temperature, acceleration & process control. (Analysis)			1			2		3				
		C226.6. Analyze the measuring system for the measurement of Flow and liquid level. (Analysis)		3			2		1					
		Average	1	2.3	2	2	2.3	2.5	2	3			2	1
AS20-03 PC10	FLUID MECHANICS AND HYDRAULIC MACHINES LAB	C227.1.Able to understand the basic working principle of a transformer; obtain the equivalent circuit parameters, estimate efficiency & regulation at various loads of 1-Φ transformers.	1	3										2
		C227.2.Able to understand load sharing oftransformers & conversion of 3- Φ to 2-Φ supply.		2	3									2
		C227.3.Able to determine the equivalent circuit parameters of a single phase induction motor. Determine the performance characteristics of $3-\Phi$ Induction motor & calculate its efficiency by direct and indirect methods.				2	1							
		C227.4.Able to analyze the regulation of an alternator by various methods at different power factors.				3								2

		C227.5.Able to determine the synchronous motor's performance curves at various power factors and field currents. C227.6.Able to determine the maximum temperature rise by using back to back test		2	2	3						
		Average	1	3.6	2.5	2.6						2
AS20-00 PC09	THERMAL ENGINEERING	C228.1 Compute the performance of IC Engines.	3	2				2			3	
	LAB	C228.2 Predict the characteristics of Fuels and Lubricates used in IC Engines.	3	2	2			2			3	
		C228.3 Compute the Performance of steam generatorand turbine.	3	3							3	
		C228.4 Outline the valve timing diagram and porttiming diagram of IC Engines.	3	2				2			2	
		C228.5 Compute the heat distribution in an IC engineand steam generator	3	2				2			3	
		C228.6 Predict the significant factors affecting the performance of IC engine and steam generators	3	2							3	
		Average	3.0	2.2	2.0			2.0			2.8	

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### III- YEAR II SEM

COURS	COURSENAME	COURSE OUTCOMES					-	PRO	GRAN	101	JTCOM	ES				
ECODE			1	2	3	4	5	6	7	8	9	10	11	12	Pso1	Pso2
		C321.1 Analyse the importance of sliding and roller contact bearings.	3		3	3									3	3
		C321.2 Illustrates the categories of engine parts.	2	3	3										3	3
		C321.3 Demonstrate the basic concepts of power transmission systems and pulleys.	3	3	3	3									3	3
ME601PC	DESIGN OF MACHINE	C321.4 Compare different types of gears and force analysis.	3	2	3	3									3	3
	MEMBERS-II	C321.5 Explain the importance compound, differential, ball of power screws and failures	3	3	3	3									3	3
		C321.6 Evaluate the plastics and wear deformation forthe gear	3	3	3	3									3	3
		Average	3		3	3									3	3
ME602PC	HEAT TRANSFER	C322.1 Analyze the different processes in conduction and convection mechanism (Analysis)	3	3												
		C322.2 Ability to understand the unsteady heat conduction processes.(Knowledge)	3	3											2	2
		C322.3Knowledge of the various processes involvedin convection.(Knowledge)		3											3	
		C322.4Analyze the significance of the dimensional analysis in conduction and convection mechanisms(Analysis)	3	3	3											
		C322.5 Design and analysis of heat exchanger Equipment's. (Synthesis)		2	3											3
		C322.6Analyze the significance of radiation analysis through experiments.(Analysis)	3	3		3									3	
		Average	3.0	2.8	3.0	3.0									2.6	2.5
ME603PC	CAD & CAM	C323.1: Students will be able to Describe the peripherals of computer aided system.	3	1	-	-	2	-	-	-	-	-	-	-	-	1
		C323.2: Students will be able to Model engineering components by applying solid modeling techniques.	-	-	2	2	3	-	-	-	-	1	-	-	2	-

		C323.3 : Students will be able to Write NC and CNC programming code by applying principles of Numerical Control systems.	-	-	2	1	3	-	-	-	-	1	-	-	1	-
		C323.4: Students will be able to Describe the concept of part family and methods of identifying the part families.	1		2	1	3	-	-	-	-	-	-	-	-	-
		C323.5: Students will be able to Describe computer aided process planning and various computer aided inspection methods in quality control.	1	2	-	3	2	-	-	-	-	-	-	-	-	2
		C323.6 : Students will be able to Describe computer integrated manufacturing and its basic components.	1	-	-	-	1	-	-	1	-	-	3	-	-	-
		Average	1.5	1.5	2	1.7	2.8			1		1	3		1.5	1.5
ME604PC	FINITE ELEMENT METHODS	C324.1 Describe finite element method to solve problems in solid mechanics, fluid mechanics and heat transfer.	3	2		2										
		C324.2 Hypothesize the stiffness equations and solve the problems on one dimensional steeped bar and tapered bar.	3	3	3											
		C324.3 Hypothesize the stiffness equations and solve problems in one dimensional structures including trusses, beams.	3	3	3											
		C324.4 Hypothesize FE characteristic equations for two dimensional elements and analyze plain stress, plain strain and axi-symmetric problems.	3	3											3	
		C324.5 Apply finite element method to solve problems in 1-D & 2-Dheat transfer.	3	2	2											
		C324.6 Solve and Apply the finite element formulations for problems involving dynamics and obtained from FEA software like	3	2			3									3
		Interpret results ANSYS.														

ME611PC	UNCONVENTION AL MACHINING	C325.1. Identify various elements and their purpose in typical instruments (Remember)	3	3	2	2	2					3	3
	PROCESSES	C325.2. Analysis of errors so as to determine correction factors for each instrument. (Analysis)	3	3	2	2	2					2	2
		C325.3 Students able to apply operations research concepts in the models of the sequencing and replacement	3	2		3						2	
		C325.4 Students able to solve the problems on theory of games and inventory	3	2		3						2	
		C325.5 Students able to solve the problems on simulation, waiting lines & Dynamic Programming.	3	2		3						3	
		Average	3.00	2.20		2.80						2.40	
		C326.1 Explain renewable energy sources & systems. (Remember)	3		2	2		3				3	3
	RENEWABLE ENERGY	C326.2 Apply engineering techniques to build solar, wind, tidal, geothermal, biofuel, fuel cell, Hydrogen and sterling engine (Understand)	3			2	3	3				2	3
EE409ES	SOURCES	C326.3 Analyze and evaluate the implication of renewable energy. Concepts in solving numerical problems pertaining to solar radiation geometry and wind energy systems. (Understand)	3		3	3	3					3	3
		C326.4 Demonstrate self -learning capability to design & establish renewable energy systems . (Understand)	3			2		2				2	3
		C326.5 Conduct experiments to assess the performance of solar PV, solar thermal and biodiesel systems(Remember)	3			3						3	3
		C326.6 Understand, Analyze and estimate the potential of new and renewable energy source (RES), the solar energy option, Environmental impact of renewable energy, about sun and its radiation measurements. (Understand)											
		Average	3.0	2.2	2.0				2.0			2.8	
ME605PC	HEAT TRANSFER LAB	C327.1 Evaluate the basic laws of heat transfer.	3	3									
		C327.2 Analyze problems involving steady state heat conduction in simple geometries.	3	3								2	2
		C327.3 Evaluate heat transfer coefficients for natural convection		3								3	

		C327.4 Analyze heat exchanger performance by using the method of log mean temperature difference.	3	3	3									
		C327.5 Analyze heat exchanger performance by using the method of heat exchanger effectiveness.		2	3									3
		C327.6 Explain radiation heat exchange between gray body surfaces.	3	3		3							3	
		Average	3.0	2.8	3.0	3.0							2.6	2.5
ME606PC	CAD & CAM LAB	C328.1 Draw the 2D & isometric views of different figures using Auto cad software	3	2					3				1	1
		C328.2Design a 3D geometry using Auto Cad		3	2	1			3					
		C328.3 Calculate stresses on 2D components usingAnsys software.	2		3				3					2
		C328.4 Calculate stress, strain, harmonic analysis on components using Ansys software	3	2					3					
		C328.5 Conduct Thermal analysis on components using Ansys software	1	3					3					
		C328.6 Write a process sheet &Produce a componentusing CNC Turning & Milling machine.	1	3					3					
		Average	2.0	2.6	2.5	1.0			3.0				1.0	1.5
EN608HS	ADVANCED COMMUNICATION SKILLS LAB	C329.1Breakdown the ideas in to its elementary constituents, analyze and act after a meaning full thought process.	1						3	2	1	3		
		C329.2Analyze the phrase and passage and explicitly pass on the ideas meaning fully.	2						3	2		3		
		C329.3Manage to interpret the given phrase or the graphical rendering and review the contents wellindividually or as a group.	1						3	2		3		
		C329.4Concentrate on the communication aspect of complicated ideas and respond positively.	2						3	2	1	3		
		C329.5Debate the issues and find the rudiments ofthe problem individually and as a group.	1						3	2	1	3		
		C329.6Respond intelligently and seek clarificationand understand completely							3	2	1	3		
		Average	1.5						3	2	1	3		

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# Correlation between the Course outcomes and Program Outcomes A.Y. 2021-22

# <u>IV YEAR – II SEM</u>

COURS	COURSENAME	COURSE OUTCOMES														
ECODE			1	2	3	4	5	6	7	8	9	10	11	12	Pso1	Pso2
	COMPOSITE MATERIALS	C421.1: Knowledge of the crystal structures of a wide range of ceramic materials and glasses.	3	1			2									1
		C421.2: Able to explain how common fibers are produced and how the properties of the fibers. are related to the internal structure			2	2	3					1			2	
MM813		C421.3 : Able to select matrices for composite materials in different applications.			2	1	3					1			1	
PE		C421.4: Able to describe key processing methods for fabricating composites.	1		2	1	3									
		C421.5 describe key processing techniques for producing metal, ceramic-, and polymer-matrix composites.	1	2		3	2									2
		C421.6 : demonstrate the relationship among synthesis, processing, and properties in composite materials.	1				1			1			3			
		Average	1.5	1.5	2	1.7	2.8			1		1	3		1.5	1.5
ME821P E	INDUSTRIAL MANAGEMENT	C422.1. Able to apply principles of management	3									2				1
		C422.2. 2 Able to design the organization structure	2									3			3	
		C422.3. Able to apply techniques for plant location, design plant layout and value analysis	1	2			3									
		C422.4. Able to carry out work study to find the best method for doing the work and establish standard time for a given method	1			2			3							
		C422.5. Able to apply various quality control techniques and sampling plans			1			2			3					
		C422.6. Able to do job evaluation and network analysis.		3			2		1							
		Average	1	2.3	2	2	2.3	2.5	2		3					

CE8000	ENVIRONM ENTAL	423. 1Identify the environmental attributes to be considered for the EIA study	2	3	2				2	2	
E	IMPACT	423.2 Formulate objectives of the EIA studies	3	2	3				2	2	
	ASSESSMEN T	423.3 Identify the methodology to prepare rapid EIA	3	3	2				2	2	
	L	423.4 Prepare EIA reports and environmental management plans.	3	2	3				2	2	
		423.5 Explain the EIA methodology	3	3	1	3			2	2	
		423. 6Understands the environmental Impact assessment procedure	3	3	1	3			2	2	2
		Average	2.8	2.6	2.0	3.0		2	2.0	2.0	2.0