Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Calculus and Differential Equations	**Subject Code: 21MAT11**
Course Outcomes	
CO1	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
CO2	Learn the notion of partial differentiation to calculate rate of change of multivariate functions and solve problems related to composite functions and Jacobian.
CO3	Solve first-order linear/nonlinear ordinary differential equations analytically using standard methods.
CO4	Demonstrate various models through higher order differential equations and solve such linear ordinary differential equations.
CO5	Test the consistency of a system of linear equations and to solve them by direct and iterative methods.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2													
CO2	3	2													
CO3	3	2													
CO4	3	2													
CO5	3	2													
Average	3	2													

Subject: Advanced Calculus and Numerical Methods	**Subject Code:21MAT21**
Course Outcomes	
CO1	Apply the concept of change of order of integration and change of variables to evaluate multiple integrals and their usage in computing the area and volume.
CO2	Illustrate the applications of multivariate calculus to understand the solenoidal and irrotational vectors and also exhibit the inter dependence of line, surface and volume integrals.
CO3	Formulate physical problems to partial differential equations and to obtain solution for standard practical PDE's.
CO4	Apply the knowledge of numerical methods in modeling of various physical and engineering phenomena.
CO5	Solve first order ordinary differential equations arising in engineering problems.

CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2													
CO2	3	2													
CO3	3	2													
CO4	3	2													
CO5	3	2													
Average	3	2													

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Department of Physics

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Engineering Physics	**Subject Code:**21PHY12/22

Course Outcomes	
CO1	Interpret the types of mechanical vibrations and their applications, the role of Shock waves in various fields.
CO2	Demonstrate the quantisation of energy for microscopic system.
CO3	Apply LASER and Optical fibers in opto electronic system.
CO4	Illustrate merits of quantum free electron theory and applications of Hall effect.
CO5	Analyse the importance of XRD and Electron Microscopy in Nano material characterization.

CO-PO-PSO Mapping

COs	**POs**												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	2	2													
CO2	2	2													
CO3	2	2													
CO4	2	2													
CO5	2	2													
Average	**2**	**2**													

Subject: Engineering Physics Laboratory	**Subject Code:** 21PHYL16/26

Course Outcomes	
CO1	Understand the measuring techniques
CO2	Operate different instruments and be capable to analyse the experimental results.
CO3	Construct the circuits and their analysis.

CO-PO-PSO Mapping

COs	**POs**												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	**3**			**3**											
CO2	**3**			**3**											
CO3	**3**			**3**											
Average	**3**			**3**											

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Department of Chemistry

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Engineering Chemistry	**Subject Code:**21CHE12/22

Course Outcomes	
CO1	Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.
CO2	Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance
CO3	Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.
CO4	Apply the knowledge of Green Chemistry principles for production of chemical compounds. understanding the concepts of alternative energy sources.
CO5	Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

CO-PO-PSO Mapping

COs	**POs**														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**			
CO1	3	1			1	1									
CO2	3	2				1						1			
CO3	3					1									
CO4	3					2	1					1			
CO5	3					2									
Average	**3**	**1.5**			**1**	**1.4**	**1**					**1**			

Subject: Engineering Chemistry Laboratory	**Subject Code:**21CHEL16/26

Course Outcomes	
CO1	Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.
CO2	Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results.

CO-PO-PSO Mapping

COs	**POs**														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**			
CO1	3	1													
CO2	3	1					1								
Average	**3**	**1**					**1**								

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Department of Information Science and Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Problem Solving Through Programming		**Subject Code:** 21PSP13/23
Course Outcomes		
CO1	Achieve Knowledge on computers and basic concepts of networks.	
CO2	Apply the basic principles of design and development of C Programming.	
CO3	Design and development of modular programming skills.	
CO4	Demonstrate Arrays and Strings in C programming concepts.	
CO5	Illustrate the basic concepts of Structures, unions, Pointers and Preprocessor Directives.	

CO-PO-PSO Mapping

COs	**POs**												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	2	2										2		
CO2	3	3	2	3									2		
CO3	2	3	3	2	2								2		
CO4	2	3	3	2									2		
CO5	3	2	2	2									2		
Average	**2.6**	**2.6**	**2.6**	**2.25**	**2**								**2**		

Subject: Computer Programming Lab		**Subject Code:** 21CPL17/27
Course Outcomes		
CO1	Understand the knowledge on simple applications in C using conditional statements and looping concepts	
CO2	Demonstrate and implement applications using arrays and strings	
CO3	Apply knowledge on functions, recursions, pointers and structures.	

CO-PO-PSO Mapping

Cos	**Pos**												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	2	2	2									3		
CO2	3	3	2	2									3		
CO3	3	3	3	3	1								3		
Average	**3**	**2.67**	**2.33**	**2.33**	**1**								**3**		

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Department of Computer Science and Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Problem Solving Through Programming		Subject Code: 21PSP13/23
Course Outcomes		
CO1	Exploring the concepts of computers and problem solving skills.	
CO2	Apply the basic principles of design and development of C Programming.	
CO3	Design and development of modular programming skills.	
CO4	Demonstrate Arrays and Strings in C programming concepts.	
CO5	Illustrate the basic concepts of Structures, unions, Pointers and Pre-processor Directives.	

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2										2		
CO2	3	3	2	3									2		
CO3	2	3	3	2	2								2		
CO4	2	3	3	2									2		
CO5	3	2	2	2									2		
Average	**2.6**	**2.6**	**2.6**	**2.25**	**2**								**2**		

Subject: Computer Programming Lab		Subject Code: 21CPL17/27
Course Outcomes		
CO1	Understand the knowledge on simple applications in C using conditional statements and looping concepts	
CO2	Demonstrate and implement applications using arrays and strings	
CO3	Apply knowledge on functions, recursions, pointers and structures.	

CO-PO-PSO Mapping

Cos	Pos												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2	2	2									3		
CO2	3	3	2	2									3		
CO3	3	3	3	3	1								3		
Average	**3**	**2.67**	**2.33**	**2.33**	**1**								**3**		

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Department of Electrical & Electronics Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II (Acn. Year 2021-22)

Subject: Basic Electrical Engineering		**Subject Code:** 21ELE13/23
Course Outcomes		
CO1	Analyze basic DC and AC electric circuits.	
CO2	Explain the working principles and performance of transformers and electrical machines.	
CO3	Discuss the concepts of electric power transmission and distribution of power.	
CO4	Understand the electricity billing, working principles of circuit protective devices and personal safety measures.	

CO-PO-PSO Mapping

COs	**POs**												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	3													
CO2	3	3													
CO3	3														
CO4	3					2		2							
CO5	3					2									
Average	**3**	**3**				**2**		**2**							

Subject: Basic Electrical Engineering Lab		**Subject Code:** 21ELEL17/27
Course Outcomes		
CO1	Analyze and verify the Kirchhoff's law, Maximum power transfer theorem, open circuit and short circuit condition for simple electrical circuit.	
CO2	Evaluate Impedance, Power and Power factor of a single phase and three phase load.	
CO3	Determine an earth resistance and to demonstrate the controlling of lamp.	
CO4	Determine efficiency of Single-phase transformer.	

CO-PO-PSO Mapping

Cos	**Pos**												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	2	2				1				1					
CO2	2	2				1				1					
CO3	2	1				1	1	1		1					
CO4	2	2				1				1					
Average	2	1.75				1	1	1		1					

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Department of Civil Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject:	Elements of Civil Engineering and Mechanics	**Subject Code:** 21CIV14/24
Course Outcomes		
CO1	Outline the various fields in civil Engineering and its importance on infrastructure Development.	
CO2	Evaluate the force system and analyzing bodies with rough surface contacts.	
CO3	Analyse the different system and bodies in equilibrium.	
CO4	Determine the centroid for regular and built up areas and moment of Inertia for composite section.	
CO5	Analyse the bodies in motion.	

CO-PO-PSO Mapping

COs	**POs**												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	2														
CO2	3	3													
CO3	3	3													
CO4	3	3	2												
CO5	2	2													
Average	**2.6**	**2.75**	**2**												

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Department of Electronics and Communication Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Basic Electronics and Communication Engineering	**Subject Code:** 21ELN14/24

Course Outcomes	
CO1	Describe the concepts of electronic circuits encompassing power supplies, amplifiers and oscillators.
CO2	Present the basics of digital logic engineering including data representation, circuits and the microcontroller system with associated sensors and actuators.
CO3	Discuss the characteristics and technological advances of embedded systems.
CO4	Relate to the fundamentals of communication engineering spanning from the frequency spectrum to the various circuits involved including antennas.
CO5	Explain the different modes of communications from wired to wireless and the computing involved.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1											1		
CO2	3	1											1		
CO3	3	1											1		
CO4	3	1											1		
CO5	3	1											1		
Average	3	1											1		

HOD

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Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject:	Elements of Mechanical Engineering	Subject Code: 21EME15/25
Course Outcomes		
CO1	Understand the basic concepts of Mechanical engineering in the field of energy resources and power generation.	
CO2	Understand the application of engineering materials and joining process in manufacturing.	
CO3	Understand the fundamental concepts of engines and future mobility technology.	
CO4	Understand basic concepts of transmission system through demonstrations.	
CO5	Apply the skills in developing simple mechanical elements and process in manufacturing and machining technology.	

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3						1								
CO2	3						1								
CO3	3														
CO4	3														
CO5	3				1										
Average	3				1		1								

Subject:	Engineering Visualization	Subject Code: 21EVN15/25
Course Outcomes		
CO1	Understand and visualize the objects with definite shape and dimension	
CO2	Analyse the shape and size of objects through different views.	
CO3	Develop the lateral surfaces of the object.	
CO4	Create a 3D view using CAD software.	
CO5	Identify the inter disciplinary engineering components or systems through its graphical representation.	

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3			3							1			
CO2	3	3			3							1			
CO3	3	3			3							1			
CO4	3	3			3							1			
CO5	3	3			3							1			
Average	3	3			3							1			

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Department of Mechanical Engineering
SJB Institute of Technology
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Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Communicative English		**Subject Code:** 21EGH18
Course Outcomes		
CO1	Understand and apply the fundamentals of communication skills.	
CO2	Identify the nuances of phonetics, intonation and enhance pronunciation skills	
CO3	To impart basic English grammar and essentials of language skills as per present requirement.	
CO4	Understand and use all types of English vocabulary and knowledge proficiency.	
CO5	Adapt the techniques of information transfer through presentation.	

CO-PO-PSO Mapping

Cos	Pos												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1										2		2			
CO2										1		1			
CO3										2		1			
CO4										1		2			
CO5										3		3			
Average										4.5		4.5			

Subject: Professional Writing Skills in English		**Subject Code:** 21EGH28
Course Outcomes		
CO1	To understand and identify the common errors in Writing and speaking.	
CO2	To Achieve better technical writing and presentation skills.	
CO3	To read technical proposals properly and make them to write good technical reports.	
CO4	Acquire employment and Workplace communication skills.	
CO5	To learn about techniques of information transfer through presentation in different levels.	

CO-PO-PSO Mapping

Cos	Pos												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1										2		2			
CO2										2		2			
CO3										3		3			
CO4										2		2			
CO5										2		2			
Average										5.5		5.5			

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Department of Mechanical Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Innovation and Design Thinking	Subject Code: 21IDT19

Course Outcomes	
CO1	Appreciate various design process procedure
CO2	Generate and develop design ideas through different technique
CO3	Identify the significance of reverse Engineering to Understand products
CO4	Draw technical drawing for design ideas

CO-PO-PSO Mapping

Cos	Pos												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3														
CO2	3														
CO3	3														
CO4	3														
Average	3														

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Department of Chemistry

Course Outcomes and CO-PO-PSO Articulation Matrix

Semester-I/II

Subject: Scientific Foundations of Health		**Subject Code:** 21SFH29
Course Outcomes		
CO1	To understand Health and wellness (and its Beliefs).	
CO2	To acquire Good Health & It's balance for positive mindset.	
CO3	To inculcate and develop the healthy lifestyle habits for good health	
CO4	To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world.	
CO5	To adopt the innovative & positive methods to avoid risks from harmful habits in their campus & outside the campus.	
CO6	To positively fight against harmful diseases for good health through positive mindset.	

CO-PO-PSO Mapping

COs	POs														
	1	2	3	4	5	6	7	8	9	10	11	12			
CO1						1		1	1	1		1			
CO2						1		1	1	1		1			
CO3						1		1	1	1		1			
CO4						1		1	1	1		1			
CO5						1		1	1	1		1			
CO6								1	1	1		1			
Average						1		1	1	1		1			

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