Program Articulation Matrix

S#	Cat	Course	CO	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
1	HAS	25FL3054 - FLG	CO1	Acquire a working knowledge of the basic elements of the French language viz. letters, vowels, accents, articles, useful expressions, etc.					2			2					
2	HAS	25FL3054 - FLG	CO2	Classify questions and respond in the affirmative or negative with ?tre and avoir and form plurals						2				2			
3	HAS	25FL3054 - FLG	CO3	Utilize and apply the adjectives and essential verbs.								3		3			
4	HAS	25FL3054 - FLG	CO4	Construct and use in speech, vocabulary, reading, questions and answers								3			3		
5	HAS	25FL3055 - GLG	CO1	Classify their understanding of greeting wishes, alphabets and numbers learning. To understand the greetings in formal and informal way					2			2					
6	HAS	25FL3055 - GLG	CO2	Apply their knowledge of essential daily expressions, present, past and future tense. Conjugating the verbs in the Singular and Plural groups, Past participle tense and the futertense and relations with the verbs										3			
7	HAS	25FL3055 - GLG	CO3	Utilize their understanding with suitable prepositions, questions, and possessive pronouns, and the importance of four German cases. Prepositions in Akkusativ and Dativ										3			
8	HAS	25FL3055 - GLG	CO4	Develop their knowledge about how to move in public places, such as shopping centres, restaurants, tourist places, etc, and preparation of them for German A1 level examination.								3			3		

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9	HAS	25FL3058 - JLG	CO1	Classify Hiragana, Katakana, and basic Kanji characters used in greetings and simple scripts					2			2					
10	HAS	25FL3058 - JLG	CO2	Apply their knowledge of essential daily expressions, numbers, months, dates, time, body parts, colors, and common vocabulary to effectively communicate in basic everyday situations										3			
11	HAS	25FL3058 - JLG	CO3	Utilize their understanding of present, past, and future tenses, along with the ability to construct interrogative sentences, to express themselves in various timeframes and ask questions effectively in different conversational contexts. pen_spark								3		3			
12	HAS	25FL3058 - JLG	CO4	Develop their knowledge of verbs, including negative conjugations, and prepositions to discuss hobbies, deliver self-introductions, and navigate basic interview scenarios in Japanese								3			3		
13	HAS	25FL3064 - KLG	CO1	Understanding of key features of Korean, Introduction to Hangul, Everyday greetings & expressions			2					2					
14	HAS	25FL3064 - KLG	CO2	Learning of important grammar particles & Parts of speeches			3					3					
15	HAS	25FL3064 - KLG	CO3	Verbs, Adjectives & additional vocabularies for daily life conversation			3							3			
16	HAS	25FL3064 - KLG	CO4	Sentence formation & Different aspects of tenses		3							3				
17	HAS	25MB4053 - MPF	CO1	Understanding Personal Finance	2												
18	HAS	25MB4053 - MPF	CO2	Applying and Building a Budget and Tracking Your Money		3											

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19	HAS	25MB4053 - MPF	CO3	Applying and Managing Debt and Credit in present context			3										
20	HAS	25MB4053 - MPF	CO4	Applying Saving and Investment to present scenario			3										
21	HAS	25MB4054 - BME	CO1	Understand the basic concepts of marketing management						2							
22	HAS	25MB4054 - BME	CO2	Understand the concepts of Marketing environment, consumer behaviour and Segmentation, Targeting and Positioning (STP)						2							
23	HAS	25MB4054 - BME	CO3	Apply the marketing mix strategies with special focus on technology products			3										
24	HAS	25MB4054 - BME	CO4	Apply promotion and distribution strategies for marketing of high tech products and services			3										
25	HAS	25MB4055 - OMG	CO1	Remember and understand the various management theories and management approaches.	2								2				
26	HAS	25MB4055 - OMG	CO2	Remember and understand organization theories, structures and organization principles.	2								2				
27	HAS	25MB4055 - OMG	CO3	Have basic knowledge and understanding of motivation, motivational theories, leadership theories, moral and behavioral sciences and also understand the management concept, administration and management objectives.	2								2				
28	HAS	25MB4055 - OMG	CO4	Remember and understand the various issues in industrial relations, trade unions and college bargaining and industrial safety.	2								2				
29	HAS	25MB4056 - PMT	CO1	Understand the basic management concepts along with an insight into levels of management									2				

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30	HAS	25MB4056 - PMT	CO2	Understand the key contributions of classical approach to Management											2		
31	HAS	25MB4056 - PMT	CO3	Understand and apply Quantitative methods to improve Management performance.									3				
32	HAS	25MB4056 - PMT	CO4	Understand the key contributions of Behavioural and contemporary approaches to Management.									3				
33	HAS	25MB4058 - SSYB	CO1	Six sigma principalsSix Sigma Foundations, Principles, Roles and Responsibilities			3	3									
34	HAS	25MB4058 - SSYB	CO2	Quality Tools and Six Sigma Metrics			3		3								
35	HAS	25MB4058 - SSYB	CO3	Six Sigma Principles			3	3									
36	HAS	25MB4058 - SSYB	CO4	Six Sigma Principles and practice					3								
37	HAS	25MB4060 - FINT	CO1	Understanding the comprehension of finance functions and diverse business models to facilitate informed decision-making processes within financial management		2											
38	HAS	25MB4060 - FINT	CO2	Analyzing the investment decisions through an understanding of capital budgeting techniques, both traditional and modern, emphasizing long-term implications.				3									
39	HAS	25MB4060 - FINT	CO3	Analyze and make informed decisions regarding working capital management, considering the short-term financial health of organizations through practical case studies.				3									
40	HAS	25MB4060 - FINT	CO4	Developing proficiency in comprehending and utilizing various sources of finance while discerning the implications of different dividend policies in practical financial scenarios.				3									

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41	HAS	25MB4067 - IMPP	CO1	Understand the basic management concepts along with an insight into production and control											1		1
42	HAS	25MB4067 - IMPP	CO2	Utilize time series and regression techniques for accurate demand prediction and production planning	2												2
43	HAS	25MB4067 - IMPP	CO3	Schedule batch and job order production to optimize resource use and efficiency				2								2	
44	HAS	25MB4067 - IMPP	CO4	Apply method study techniques to analyze and improve work processes systematically											2		2
45	HAS	25MB4068 - FMFE	CO1	Understanding the comprehension of finance functions and diverse business models to facilitate informed decision-making processes within financial management		2											
46	HAS	25MB4068 - FMFE	CO2	Analyzing the investment decisions through an understanding of capital budgeting techniques, both traditional and modern, emphasizing long-term implications.				3									
47	HAS	25MB4068 - FMFE	CO3	Analyze and make informed decisions regarding working capital management, considering the short-term financial health of organizations through practical case studies.				3									
48	HAS	25MB4068 - FMFE	CO4	Developing proficiency in comprehending and utilizing various sources of finance while discerning the implications of different dividend policies in practical financial scenarios.				3									
49	HAS	25MB4070 - SLSI	CO1	Understand the fundamental concepts of sustainability and the role of leadership in driving sustainable practices	2					2							

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50	HAS	25MB4070 - SLSI	CO2	Analyze the strategic implications of sustainability in business and policymaking				3		3					3		
51	HAS	25MB4070 - SLSI	CO3	Evaluate sustainable business models and leadership frameworks for long-term impact			3				3						
52	HAS	25MB4070 - SLSI	CO4	Develop strategic solutions and leadership approaches to address real-world sustainability challenges				3					3	3			
53	HAS	25MB4071 - RSQM	CO1	Interpreting the basic systems of manpower and materials management	2		2	2									
54	HAS	25MB4071 - RSQM	CO2	Explaining the basic systems of machinery management			2	2									
55	HAS	25MB4071 - RSQM	CO3	Classify the basic systems of safety management	2		2	2									
56	HAS	25MB4071 - RSQM	CO4	Understand the basic systems of quality management	2		2	2									
57	HAS	25MB4072 - IPTBF	CO1	Explain investment concepts, risk - return trade-off, and factors influencing required rate of return.	2	2											
58	HAS	25MB4072 - IPTBF	CO2	Apply fundamental and technical analysis to evaluate securities, industries, and firms.	3				3								
59	HAS	25MB4072 - IPTBF	CO3	Construct and analyze portfolios using CAPM, APT, and modern portfolio theories.			3					3					
60	HAS	25MB4072 - IPTBF	CO4	Evaluate portfolio performance using risk-adjusted performance measures and selection models.						3				3			
61	HAS	25MB4073 - IM	CO1	Develop value proposition for the problem identified	2	3											
62	HAS	25MB4073 - IM	CO2	Build MVP for the solution developed			3			2							

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63	HAS	25MB4073 - IM	CO3	Devise go to market strategy				2	3								
64	HAS	25MB4073 - IM	CO4	Create a Pitch-deck with funding strategy							1	2					
65	HAS	25MB4231 - DMK	CO1	Outline the key concepts of digital marketing.	2												
66	HAS	25MB4231 - DMK	CO2	Apply SEO to a website.	3												
67	HAS	25MB4231 - DMK	CO3	Use the key PPC concepts to draw visitors to a business websites		3											
68	HAS	25MB4231 - DMK	CO4	Analyze Campaign Management to manage the marketing concepts		3											
69	HAS	25MB4231 - DMK	CO5	Analyze digital marketing strategies		3											
70	HAS	25UC0021 - SIL-1	CO1	Apply effective communication and collaboration skills to work with diverse populations in addressing social issues within the community								3	3				
71	HAS	25UC0021 - SIL-1	CO2	Build technological solutions to real-world problems or challenges with peers to achieve common goals.								3	3				
72	HAS	25UC0021 - SIL-1	CO3	Plan effectively to communicate ideas and collaborate with others to achieve artistic or recreational goals.				3									
73	HAS	25UC0021 - SIL-1	CO4	Develop innovative solutions by thinking critically and creatively within a collaborative social immersive learning environment				3							3		
74	HAS	25UC0021 - SIL-1	CO5	Identify the strategies to promote personal well-being for healthy living through social interaction and shared experiences.			3								3		

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75	HAS	25UC0022 - SIL-2	CO1	Apply effective communication and collaboration skills to work with diverse populations in addressing social issues within the community		3						3	3				
76	HAS	25UC0022 - SIL-2	CO2	Build technological solutions to real-world problems or challenges with peers to achieve common goals		3						3	3				
77	HAS	25UC0022 - SIL-2	CO3	Plan effectively to communicate ideas and collaborate with others to achieve artistic or recreational goals.		3						3	3				
78	HAS	25UC0022 - SIL-2	CO4	Develop innovative solutions by thinking critically and creatively within a collaborative social immersive learning environment		3						3	3				
79	HAS	25UC0022 - SIL-2	CO5	Identify the strategies to promote personal well-being for healthy living through social interaction and shared experiences		3						3	3				
80	HAS	25UC0026 - UHV	CO1	Understanding the basic concepts of value education								2	2				
81	HAS	25UC0026 - UHV	CO2	Gain basic understanding of principles in harmony among human beings								2	2				
82	HAS	25UC0026 - UHV	CO3	Gain knowledge in the concept of Harmony in the family and society								3	3				
83	HAS	25UC0026 - UHV	CO4	Acquire knowledge in the concepts of harmony in the nature								3	3				
84	HAS	25UC1102 - LSE	CO1	Understand the essential listening, speaking, and reading skills, preparing them form effective communication in various personal and professional contexts.										2			

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85	HAS	25UC1102 - LSE	CO2	Apply essential writing and non-verbal communication skills, preparing them for effective written and non-verbal interactions in various personal and professional										3			
86	HAS	25UC1203 - DTI	CO1	Understand the importance of Design thinking mindset for identifying contextualized		2											
87	HAS	25UC1203 - DTI	CO2	Analyze the problem statement by empathizing with user							3						
88	HAS	25UC1203 - DTI	CO3	Develop ideation and test the prototypes made			3										
89	HAS	25UC1203 - DTI	CO4	Explore the fundamentals of entrepreneurship skills for transforming the challenge											3		
90	HAS	25UC1204 - CSE	CO1	Understand the essential career skills, including resume writing, interview techniques, group discussions, and exploring career opportunities, preparing them for successful career advancement									3	3			
91	HAS	25UC1204 - CSE	CO2	Apply a comprehensive understanding of essential team skills, preparing them for successful collaboration and contribution in professional team environments.									3	3			
92	BSC	25CY1001 - SCE2	CO1	Apply the operation of electrochemical systems to produce electric energy and storagedevices.	3	3											
93	BSC	25CY1001 - SCE2	CO2	Use the fundamental aspects of electrochemistry and materials science relevant tocorrosion phenomena.	3	3											
94	BSC	25CY1001 - SCE2	CO3	Examine water quality and apply appropriate purification technique for intendedproblem.	3	3											

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95	BSC	25CY1001 - SCE2	CO4	Employ the fundamental principles and general properties of materials in variousengineering applications.	3	3											
96	BSC	25CY1001 - SCE2	CO5	Analyze the data, develop skills in chemical analysis and their application inengineering.	3						3						
97	BSC	25ME2105 - MMS	CO1	Understand crystallography and various material testing methods	1	1										1	
98	BSC	25ME2105 - MMS	CO2	Understand and distinguish various types of materials based on their engineering applications	1	1										1	
99	BSC	25ME2105 - MMS	CO3	Apply the concepts of cooling curves and phase diagrams	2	2										2	
100	BSC	25ME2105 - MMS	CO4	Apply the concepts of heat treatment processes and their strengthening mechanisms	2	2										2	
101	BSC	25ME2105 - MMS	CO5	Apply practical knowledge and skills in conducting a wide range of experiments on metallography and heat treatment processes, gaining hands-on experience	2	2										2	
102	BSC	25MT1001 - LCE	CO1	Apply matrix algebra to the real-world applications in engineering, physical and biological sciences, computer science, finance, economics and solving the system of equations.	3												
103	BSC	25MT1001 - LCE	CO2	Apply multivariate differential calculus to find maxima & minima of functions and understand the concepts of second order differential equations and its applications.	3												
104	BSC	25MT1001 - LCE	CO3	Apply beta and gamma functions to evaluate improper integrals. Evaluate double and triple integrals techniques over a region in two dimensional and three-dimensional geometry.	3												

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105	BSC	25MT1001 - LCE	CO4	Interpret the physical meaning of different operators such as gradient, curl and compute the line integrals of vector functions and learn their applications.	3												
106	BSC	25MT2003 - MNMM	CO1	Apply difference equations to model and solve real life problems.	3		3										
107	BSC	25MT2003 - MNMM	CO2	Apply method of least squares for the best fitting linear and nonlinear models.	3		3										
108	BSC	25MT2003 - MNMM	CO3	Apply simulation modeling to Interpret real life problems.	3		3										
109	BSC	25MT2003 - MNMM	CO4	Apply mathematical modelling through differential equations	3		3										
110	BSC	25MT2003 - MNMM	CO5	Verify the solution of the equations using MATLAB				3									
111	BSC	25MT2004 - MTO	CO1	Apply various methods for finding the optimal solution of Linear Programming Problem.	3				3								
112	BSC	25MT2004 - MTO	CO2	Apply Integer Programming and Gradient methods for solving optimization problems.	3		3										
113	BSC	25MT2004 - MTO	CO3	Express a practical problem, such as an engineering analysis or design problem and to optimize a multivariate quadratic function subject to linear constraints on the variables.	3		3										
114	BSC	25MT2004 - MTO	CO4	Apply and understand the search and optimization methodologies applicable to the resolution of multi disciplinary decision problems, under a decision support framework.	3		3										
115	BSC	25MT2019 - PNS	CO1	Apply the importance of probabilistic concepts in a wide spectrum of problems arising in engineering applied science.	3		3	3									

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116	BSC	25MT2019 - PNS	CO2	Assess the relationship between variables using corelation and regression techinques	3		3	3									
117	BSC	25MT2019 - PNS	CO3	Apply the role of Statistical tests of significance in solving real world engineering problems	3		3	3									
118	BSC	25MT2019 - PNS	CO4	Formulate Stochastic process in terms of Markov chains and solve problems in queueing systems, and network	3		3	3									
119	ESC	25EC1101 - BEEC	CO1	Understand the basic concepts of AC and DC circuits and apply them to solve electric circuit problems.	2												
120	ESC	25EC1101 - BEEC	CO2	Apply different circuit analysis techniques to find voltage, current, impedance and power in electrical circuits.	3												
121	ESC	25EC1101 - BEEC	CO3	Comprehend the behavior of basic electronic components, such as diodes and transistor, and their applications.	2												
122	ESC	25EC1101 - BEEC	CO4	Understand the basic functional principles of different analog ICs, such as IC 741 Op Amp, IC 555 Timer and IC Voltage Regulators.	2												
123	ESC	25EC1101 - BEEC	CO5	Utilize measurement tools and equipment for validating theoretical concepts of different electrical and electronic circuits and develop problem solving capabilities through hands on experimentation.	3												
124	ESC	25ME1001 - EM	CO1	Apply the concept of forces, governing static equations, and analyze the planar system of forces.		2											
125	ESC	25ME1001 - EM	CO2	Use analytical techniques for analyzing forces in statically determinate structures		2											

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126	ESC	25ME1001 - EM	CO3	Apply the concepts of planar and non-planar system of parallel forces and estimate the moment of inertia for lamina and material bodies.			2										
127	ESC	25ME1001 - EM	CO4	Apply fundamental concepts of kinematics and kinetics of particles to solve simple practical problems of rigid bodies and particles.			2										
128	ESC	25ME1002 - EG	CO1	Apply the principles of orthographic and pictorial projections to visualize, sketch, and interpret engineering objects.	2				2								
129	ESC	25ME1002 - EG	CO2	Develop 3D part models, assemblies, and tolerance drawings using Autodesk CAD & Fusion 360.	2				2								
130	ESC	25ME1004 - WPE	CO1	Demonstrate fundamental skills in foundry, molding, casting, and both arc and gas welding operations.	2				2							2	
131	ESC	25ME1004 - WPE	CO2	Perform basic machining operations using lathe, drill and milling machines.	2				2							2	
132	ESC	25ME1103 - DTW	CO1	Demonstrate proficiency in typing sentence , paragraph , report , presentations along spread sheets using office tools, LaTeX tools and PowerBI		2			2								
133	ESC	25ME1103 - DTW	CO2	Build a static website and blog with using html along with Special features of HTML5, CSS and Javascript					3					3			
134	ESC	25ME1103 - DTW	CO3	Develop a virtual environment with cospace and construct a marker based Augumented Reality	3		3										
135	ESC	25ME1103 - DTW	CO4	Utilising the softwares of Autodesk Fusion 360 and the same can be printed in 3D printer as physical prototype	3		3										

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136	ESC	25ME2109 - TD	CO1	Understand the basic concepts of thermodynamics and apply first law of thermodynamics to various flow and non-flow processes	2												
137	ESC	25ME2109 - TD	CO2	Apply second law of thermodynamics and principle of entropy to verify the reversibility , irreversibility and assess the availability in a process. Also, Understand the relationship between thermodynamic properties using maxwell\'s relations	2												
138	ESC	25ME2109 - TD	CO3	Analyze the properties of steam and assess various methods to improve the performance of a vapour power cycle		2											
139	ESC	25ME2109 - TD	CO4	Apply thermodynamic principles to estimate the performance of different air standard cycles.		2											
140	ESC	25SC1101 - PSTC	CO1	Develop Basic and Complex Building Blocks for real world problems using structured programming paradigm	3	3	3		3								
141	ESC	25SC1101 - PSTC	CO2	Develop logical building blocks using conditional statements to solve real world problems	3	3	3		3								
142	ESC	25SC1101 - PSTC	CO3	Develop logical solutions using the concepts of arrays and functions	3	3	3		3								
143	ESC	25SC1101 - PSTC	CO4	Develop solutions by applying various operations on user defined data types such as structures and unions	3	3	3		3								
144	ESC	25SC1101 - PSTC	CO5	Apply the structured programming paradigm with logic building skills on Basic and Linear Data Structures for solving real world problems	3	3	3		3								

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145	ESC	25SC1101 - PSTC	CO6	Skill the students in such a way that students will be able to develop logic that help them to create programs as well as applications in C	3	3	3		3								
146	ESC	25SC1203 - DST	CO1	Understand various sorting algorithms and analyze the efficiency of the algorithms	2	2	2		2								
147	ESC	25SC1203 - DST	CO2	Implement and evaluate Linear Data Structures and Demonstrate their applications	3	3	3		3								
148	ESC	25SC1203 - DST	CO3	Implement and evaluate tree data structures and understand hashing techniques	3	3	3		3								
149	ESC	25SC1203 - DST	CO4	Understand graph data structures and apply graphs to solve problems	2	2	2		2								
150	ESC	25SC1203 - DST	CO5	Design, Develop and evaluate common practical applications for linear and nonlinear data structures	3	3	3		3								
151	ESC	25SC1203 - DST	CO6	Skill the students in such a way that students will be able to develop and create programs as well as applications in DS	3	3	3		3								
152	ESC	25SC2007 - PP	CO1	Apply the concepts of Basic Data types, Operators, Decision and Looping Control Statements, String	3	3	3		3								
153	ESC	25SC2007 - PP	CO2	Apply the concepts of Lists, Tuples, Dictionaries. Functions, Modules, Class, Object, OOPS principles.	3	3	3		3								
154	ESC	25SC2007 - PP	CO3	Apply the concept of OOP priciples, Clasess and Objects, Call by value vs call by reference, recursion and nested classes	3	3	3		3								
155	ESC	25SC2007 - PP	CO4	Apply the concept of files, interfaces, packages, threads	3	3	3		3								

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156	ESC	25SC2007 - PP	CO5	Design, implement and evaluate python program using basic datatypes, variables, expressions, conditional statements, loops, functions, built-in data structures, object oriented concepts, python libraries and modules, debugging techniques and file I/O to solve programming problems	3	3	3		3				3		3		
157	PCC	25AD2001 - AIML	CO1	Apply classical AI techniques such as search, constraint satisfaction, and logical inference to solve real-world problems.		3	3										
158	PCC	25AD2001 - AIML	CO2	Demonstrate ability to build intelligent systems using probabilistic reasoning and basic learning models		3	3										
159	PCC	25AD2001 - AIML	CO3	Apply supervised and unsupervised machine learning algorithms to practical problems and interpret results using performance metrics.		3	3										
160	PCC	25AD2001 - AIML	CO4	Implement deep learning models, reinforcement learning, and deploy models while addressing ethical concerns in AI applications		3	3		3								
161	PCC	25AD2001 - AIML	CO5	Lead peer teams in model development, experimentation, and responsible deployment using MLOps and explainability tools.									3	3			
162	PCC	25ME2106 - FMHM	CO1	Apply the knowledge of fluid properties and the laws of fluid statics to estimate the total pressure, Centre of pressure and forces on submerged and floating bodies	2	2										2	
163	PCC	25ME2106 - FMHM	CO2	Apply continuity, Euler and Bernoulli equations and estimate the discharge through different flow measuring devices	2	2										2	

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164	PCC	25ME2106 - FMHM	CO3	Apply the principles of fluid laws to estimate the losses in pipe flows and impact of jets on different plate geometries	2	2										2	
165	PCC	25ME2106 - FMHM	CO4	Analyze the performance of hydraulic turbines and pumps using velocity triangles and model similitude.	2	2	2									2	
166	PCC	25ME2106 - FMHM	CO5	Conduct experiments to verify and apply various fluid flow principles and performance evaluation of various hydraulic machines like turbines and	2	2	2									2	
167	PCC	25ME2107 - MOS	CO1	Analyze stresses in members with axial loading or torsion	2	2										2	
168	PCC	25ME2107 - MOS	CO2	Analyze members with multi axial loading and lateral loading	2	2										2	
169	PCC	25ME2107 - MOS	CO3	Analyze members with multi axial loading and lateral loading	2	2										2	
170	PCC	25ME2107 - MOS	CO4	Analyse columns and pressure vessels	2	2										2	
171	PCC	25ME2107 - MOS	CO5	Apply the theoretical concepts to conduct various experiments of strength of materials practically and analyze the data					2							2	
172	PCC	25ME2108 - MPT	CO1	Apply the principles of pattern design, gating system configuration, and metal forming to suitable casting and welding techniques for manufacturing applications.			2		2								2
173	PCC	25ME2108 - MPT	CO2	Apply the principles of metal cutting mechanics to analyze tool geometry and compute machining time and power requirements for conventional machine tools.		2			2								2

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174	PCC	25ME2108 - MPT	CO3	Explain the working principles, process parameters and applications of various unconventional machining processes.	1	1											1
175	PCC	25ME2108 - MPT	CO4	Explain the concepts of Geometric Dimensioning and Tolerancing (GD&T), and the application of Taylors Principle in inspection processes.	1	1											1
176	PCC	25ME2108 - MPT	CO5	Apply the concepts of casting, welding, conventional and unconventional machining, and metrology to perform and evaluate manufacturing experiments using appropriate tools and techniques.	2		2										2
177	PCC	25ME2210 - AMT	CO1	Apply advanced automation techniques to design and optimize smart production systems.		2			2							2	
178	PCC	25ME2210 - AMT	CO2	Interpret and apply the concepts of Industry 4.0 and Cyber-Physical Systems (CPS)			2		2								2
179	PCC	25ME2210 - AMT	CO3	Apply the concepts of inspection methods to inspect the end products		2	2									2	
180	PCC	25ME2210 - AMT	CO4	Design and implement Digital twins technologies to monitor real-time system in Manufacturing		2	2										2
181	PCC	25ME2210 - AMT	CO5	Develop, integrate, and evaluate smart manufacturing systems		2	2										2
182	PCC	25ME2211 - KDOM	CO1	Apply the basic principles and concepts of kinematics and mobility of the	2				2								
183	PCC	25ME2211 - KDOM	CO2	Analyze and kinematic design of mechanisms and machines using velocity and acceleration analysis	2				2								

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184	PCC	25ME2211 - KDOM	CO3	Apply principles of cams to draw cam profiles and understand gear systems and gear trains for various applications.	2				2								
185	PCC	25ME2211 - KDOM	CO4	nderstand the principles of balancing and vibrations and analyze gyroscopic effect on naval ships and automobiles	2				2								
186	PCC	25ME2211 - KDOM	CO5	Apply and analyze the concepts learned in theory to perform experiments related to mechanisms and machines using the ADAMS simulation software for data analysis.	2												
187	PCC	25ME3112 - HT	CO1	Apply Fourier law of conduction and combined conduction convection concepts to 1-D heat transfer problems	2	2										2	
188	PCC	25ME3112 - HT	CO2	Analyze heat transfer through extended surfaces and apply unsteady state heat transfer to various systems	2	2										2	
189	PCC	25ME3112 - HT	CO3	Apply the emperical correlations for solving convection heat transfer and heat transfer during phase change.	2	2										2	
190	PCC	25ME3112 - HT	CO4	Analyze various types of heat exchangers by applying the principles of conduction, convection, radiation	2	2										2	
191	PCC	25ME3112 - HT	CO5	Analyze various parameters of heat transfer in different thermal systems physically/numerically	2	2										2	
192	PCC	25ME3212 - MD	CO1	Analyze transmission shafts, couplings and springs for given design conditions			2										2
193	PCC	25ME3212 - MD	CO2	Analyze welding,bolted fastening systems for given design conditions			2										2

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194	PCC	25ME3212 - MD	CO3	Analyze and select the appropriate bearings, belt drives and chain drives for given working conditions			2										2
195	PCC	25ME3212 - MD	CO4	Analyze the spur and helical gears, band and block brakes for given working conditions			2										2
196	PCC	25ME3212 - MD	CO5	Simulate and Evaluate a virtual/functional prototype				3									3
197	PCC	25ME3214 - DTS	CO1	Apply the concepts of vapour power cycles to analyze steam turbines and nozzles to determine flow parameters and discharge conditions.	2	2											
198	PCC	25ME3214 - DTS	CO2	Apply the principles of thermodynamics to determine the performance of single and multistage compressors	2	2											
199	PCC	25ME3214 - DTS	CO3	Apply the concepts of Psychrometry to analyze the simple and vapour compression refrigeration processes.	2	2											
200	PCC	25ME3214 - DTS	CO4	Design and optimization of various thermal energy systems such as heat exchangers and engines.				2									
201	PCC	25ME3214 - DTS	CO5	Conduct parametric study to design thermal systems such as steam turbines, nozzles and compressors using equation solver.				2									
202	PRI	25IE2040 - SIP	CO1	Remember the fundamentals of the science of water cycle along with powerful tools that students can use to diagnose the health of the local water cycle as well as develop targeted action plans to restore the local natural water cycle and bring water			2										

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203	PRI	25IE2040 - SIP	CO2	Remember the water sustainability and water resilience of village, city, residential facilities and households using multi-level water scorecards				2									
204	PRI	25IE2040 - SIP	CO3	Apply the design thinking positive action plan for a village, campus, residential					3								
205	PRI	25IE2040 - SIP	CO4	Apply the water positive solutions within an urban watershed, a rural watershed						3							
206	PRI	25IE3041 - TIP	CO1	Ability to demonstrate the impact of academic skills and logical thinking			3										
207	PRI	25IE3041 - TIP	CO2	Ability to integrate existing and new technical knowledge for industrial application				3									
208	PRI	25IE3041 - TIP	CO3	Ability to demonstrate the impact of the internship on their learning and professional development					3								
209	PRI	25IE3041 - TIP	CO4	Demonstrate the ability to harness resources by analyzing challenges						3							
210	PRI	25IE4042 - INT	CO5	INTERNSHIP	3	3											
211	PRI	25IE4048 - EPJ	CO1	Develop skills to conduct comprehensive searches, critically assess the credibility of sources, and apply research findings to support their academic or professional work.	3												
212	PRI	25IE4048 - EPJ	CO2	Analyze situations critically, identify underlying causes, and articulate clear problem statements that guide effective problem-solving strategies.		3											

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213	PRI	25IE4048 - EPJ	CO3	Develop the ability to dissect research findings, identify strengths and weaknesses, and draw informed conclusions that contribute to their own academic or professional endeavors.						3							
214	PRI	25IE4048 - EPJ	CO4	Gain the skills to judge the validity, reliability, and impact of research, enabling them to make informed decisions and provide constructive feedback in academic or professional contexts.									3				
215	PRI	25IE4051 - INT-1	CO5	INTERNSHIP	3	3											
216	PRI	25IE4052 - INT-2	CO5	INTERNSHIP	3	3											
217	PRI	25IE4053 - ECP-1	CO1	Exercise to acquire knowledge within the chosen area of technology for project development.	2												
218	PRI	25IE4053 - ECP-1	CO2	Identify, discuss and justify the technical aspects of the chosen area for problem analysis		3											
219	PRI	25IE4053 - ECP-1	CO3	Reproduce, improve and refine technical aspects for chosen problem						2							
220	PRI	25IE4053 - ECP-1	CO4	Communicate and report effectively project related activities and findings.									3				
221	PRI	25IE4054 - ECP-2	CO1	Develop skills to conduct comprehensive searches, critically assess the credibility of sources, and apply research findings to support their academic or professional work.	3												
222	PRI	25IE4054 - ECP-2	CO2	Analyze situations critically, identify underlying causes, and articulate problem statements that guide effective problem-solving strategies.		3											

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223	PRI	25IE4054 - ECP-2	CO3	Develop the ability to dissect research findings, identify strengths and weaknesses,and draw informed conclusions that contribute to their own academic or professional endeavors.						3							
224	PRI	25IE4054 - ECP-2	CO4	Gain the skills to judge the validity, reliability, and impact of research, enabling them to make informed decisions and provide constructive feedback in academic or professional contexts.									3				
225	PRI	25IE4055 - IP-1	CO1	Understand the fundamental principles and processes of innovation			2	2	2								
226	PRI	25IE4055 - IP-1	CO2	Develop skills to identify and evaluate opportunities for innovation			3	3	3								
227	PRI	25IE4055 - IP-1	CO3	Apply research methodologies to gather and analyze data for innovative solutions.				3	3				3				
228	PRI	25IE4055 - IP-1	CO4	Enhance team collaboration and project management skills in an innovation context.				3	3				3				
229	PRI	25IE4056 - IP-2	CO1	Develop advanced project management skills for innovation projects.			2	2	2								
230	PRI	25IE4056 - IP-2	CO2	Apply advanced analytical tools to refine innovative ideas.			3	3	3								
231	PRI	25IE4056 - IP-2	CO3	Create detailed business plans for innovative solutions.				3	3	3							
232	PRI	25IE4056 - IP-2	CO4	Present and defend innovation projects effectively to stakeholders.				3	3	3							
233	PRI	25IE4057 - RP-1	CO1	Demonstrate the basic principles of research methodology.			2	2	2								
234	PRI	25IE4057 - RP-1	CO2	Conduct a literature review and identify simple research problems.			3	3	3								

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235	PRI	25IE4057 - RP-1	CO3	Formulate basic research questions and hypotheses.				3	3	3							
236	PRI	25IE4057 - RP-1	CO4	Develop a straightforward research proposal including methodology and expected outcomes				3	3	3							
237	PRI	25IE4058 - RP-2	CO1	Implement advanced research methodologies for data collection and analysis.			2	2	2								
238	PRI	25IE4058 - RP-2	CO2	Interpret complex research findings and discuss their implications.			3	3	3								
239	PRI	25IE4058 - RP-2	CO3	Develop advanced skills in academic writing and publication.			3	3					3				
240	PRI	25IE4058 - RP-2	CO4	Present research findings effectively to an academic and professional audience.			3	3					3				
					2.4	2.5	2.7	2.7	2.6	2.6	2.5	2.7	2.8	2.9	2.6	1.9	1.9