

Supporting Documents

Criteria	II – Teaching-Learning and Evaluation
Key Indicator	2.6 Student Performance and Learning Outcomes
Metric	2.6.1 The institution has stated learning outcomes (generic and program specific)/graduate attributes which are integrated into the assessment process and widely publicized through the website and other documents.

List of documents:

Note: Following documents are provided in this	file.
Program Articulation Matrix	Page
B. Tech (CE)	PAM-1
B. Tech (CSE)	PAM-37
B. Tech (EEE)	PAM-78
B. Tech (ME)	PAM-117
M. Tech (HSEE)	PAM-153
BBA	PAM-174
MBA	PAM-217

Course Code	PO1	PO2a	PO2b	PO2c	PO3a	PO3b	PO3c	PO4a	PO4b	PO4c	PO5a	PO5b	PO6	PO7a	PO7b	PSO1	PSO2
ES1101	0.00	0.33	0.56	0.00	1.00	0.78	0.00	0.67	0.00	0.33	0.89	0.00	0.56	0.56	0.00	0.00	0.00
ES1102	1.17	0.17	0.17	0.17	1.17	0.67	0.67	0.17	0.00	0.00	0.33	0.33	0.33	0.67	0.00	0.00	0.00
AS1101	1.00	0.00	0.25	0.00	0.38	0.13	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.13	0.13	0.00	0.00
CC1101	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.60	0.00	0.40	0.00	0.00	0.00	0.00
ES1103	0.50	0.00	0.00	0.00	0.38	1.75	1.38	0.00	0.25	0.00	0.88	0.00	0.75	0.00	0.00	0.00	0.00
ES1104	0.50	0.00	0.00	0.00	0.92	0.33	0.25	0.33	0.25	0.00	0.00	0.50	0.17	0.67	0.00	0.00	0.00
CS1101	0.00	0.00	0.00	0.00	0.40	0.40	0.20	0.00	0.00	0.00	0.40	0.40	0.00	0.40	0.00	0.00	0.00
ES1105	0.67	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
CC1102	0.00	0.00	0.40	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.60	0.00	0.00	0.00	0.00
AS1102	0.50	0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
CE1101	0.60	0.00	0.80	0.00	1.40	0.40	0.00	0.00	0.60	0.20	0.20	0.20	0.00	0.00	0.80	1.20	1.60
ES1106	0.10	0.10	0.00	0.00	1.40	1.00	0.80	1.00	0.40	0.20	0.60	0.60	0.00	0.10	0.10	0.00	0.00
ES1107	0.80	0.40	0.40	0.20	1.20	1.20	1.00	0.80	0.60	0.00	0.80	0.40	0.40	0.20	0.00	0.00	0.00
CE1103	0.25	0.25	0.25	0.50	1.00	1.00	0.75	0.75	0.50	0.00	0.00	0.25	0.25	0.25	0.00	1.00	0.75
CC1103	0.50	0.00	0.50	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.75	1.00	0.75	0.00	0.00	0.00	0.00
IL1101	1.25	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.25	0.50	0.00	0.00	0.00	0.00
CE1112	0.75	0.88	0.38	0.13	1.00	0.50	0.38	0.88	0.38	0.00	0.00	0.13	0.88	0.00	0.00	0.75	1.00
ES1109	0.57	0.14	0.43	0.00	1.00	1.43	1.00	1.00	0.00	0.29	0.57	0.00	0.14	0.71	0.00	0.00	0.00
CE1104	0.00	0.00	0.80	0.00	1.00	1.00	0.00	0.00	0.60	0.00	0.20	0.00	0.00	0.00	0.20	1.00	1.20
CE1105	1.00	0.00	0.25	0.50	0.50	0.50	0.25	0.75	0.25	0.25	0.25	0.75	0.00	0.50	0.25	1.00	1.00
CE1106	0.20	0.00	0.00	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.00	0.00	0.20	0.00	0.00	0.40	0.60
CC1104	0.25	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.00
IL1102	1.14	0.00	0.14	0.00	0.00	0.14	0.86	0.43	0.14	0.14	0.00	0.00	0.57	0.43	0.00	0.00	0.00
CE1109	1.33	0.67	0.50	0.67	1.17	0.17	0.00	0.33	0.50	0.17	0.33	1.00	0.33	0.67	0.17	1.67	1.33
CE1108	0.33	0.00	0.83	0.33	1.50	0.83	0.67	0.83	0.83	0.83	0.33	0.17	0.00	1.00	1.00	1.00	1.50

Program Articulation Matrix (B. Tech CE)

CC1105	1.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1.20	0.40	0.80	0.00	0.00	0.00	0.00
EE1111	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.71	0.57	0.86	0.71	0.00	0.29	0.43	0.00	0.00	0.00
PR1101	0.80	0.00	0.00	0.00	0.80	0.40	0.80	0.00	0.40	0.40	0.00	0.40	0.00	0.60	0.00	0.00	0.00
CE1113	1.00	0.25	0.25	0.50	1.00	0.50	0.25	0.00	0.75	1.00	0.50	1.00	0.00	1.25	0.75	1.50	1.50
CE1102	1.00	0.83	0.83	1.00	0.83	0.17	1.00	0.50	0.33	0.50	0.67	0.33	0.17	0.50	0.33	1.67	1.33
CC1106	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00
DE (1)																1.00	1.20
DE (2)																1.20	1.10
DE (3)																1.30	1.20
DE (4)																1.10	1.30
DE (5)																1.30	1.20
Total*	18.36	4.85	8.69	4.50	19.57	14.58	11.23	10.80	8.21	5.17	12.75	9.11	10.83	9.81	3.73	17.09	17.81
Program Articulation	С	N	AB	N	С	AB	AB	AB	AB	N	AB	AB	AB	AB	N	С	С
Expectation	С	N	N/AB	N	С	AB	AB	AB	N/AB	N	AB	AB	AB	AB	N	С	С

Description of levels of Program Articulation:

Novice (N) (Low)	 Knows objective facts, features, and rules for determining actions with respect to this PO/PSO without being context sensitive. Has studied the basic concepts.
Advanced beginner (AB) (Moderate)	 Recognizes common situations with respect to this PO/PSO that help in recalling which rules should be exercised, starts to recognize and handle situations not covered by given facts, features and rules. Has problem solving and repeated practice experience for common situations with respect to this PO/PSO.
Competent (C) (High)	 Performs most standard actions with respect to this PO/PSO without conscious application of rules after considering the whole situation. Handles new situations through the appropriate application of rules, can design systems. May lead. Has demonstrated this PO/PSO through repeated engagements in advanced problem solving, projects, extensive practice in common and exception situations, and participated in professional networks.

Calculation Criteria for the Program Articulation Levels:

Novice (N) (Low)	Total* < 8
Advanced beginner (AB) (Moderate)	8 ≤ Total* < 16
Competent (C) (High)	Total* ≥ 16

JK Lakshmipat University, Jaipur Institute of Engineering and Technology Department of Civil Engineering Course Structure for the B. Tech (Batch 2019-2023)

Semester				Courses				Credits
	Computational Data Analysis	Design and Prototyping	Experimental Science-I	Fundamentals of Communication				
I	ES1101	ES1102	AS1101	CC1101				
	(10s 2 0)	(68.0.0)	(104)	(201)				
	10	6	3	2				21
	Calculus and	Fundamentals	Object	Energy and	Critical	C - i - m t i fi -		
	Applied	of Automation	Oriented	Environmental	Thinking and	Perspectives		
п	Mechanics	Engineering	Programming	Studies	Storytelling	Terspectives		
11	ES1103	ES1104	CS1101	ES1105	CC1102	AS1102		
	(6s 2 0)	(6s 2 0)	(1 0 4)	(100)	(200)			
	6	6	3	1	2	2		20
	Civil Computational Engineering Materials Analysis-I		Engineering Measurements and Machines	Fluid Mechanics and Hydraulic Engineering	Perspectives on Contemporary Issues	Perspectives on Management Contemporary Perspectives		
III	CE1101	ES1106	ES1107	CE1103	CC1103	IL1101	1	
	(3 0 2)	(3 1 2)	(3 0 4)	(3 0 2)	(201)	(Management Week)		
	4 5 Construction Computational		5	4	2	2		22
	Construction Project Management	Computational Engineering Analysis-II	Structural Analysis	Construction Technology	Civil Engineering CAD Lab	Communication and Identity	Introduction to Design	
IV	CE1112	ES1109	CE1104	CE1105	CE1106	CC1104	IL1102	
	(3 0 2 0)	(3 1 2 0)	(3000)	(3020)	(0 0 2 0)	(2010)	(Design Week)	
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		3	4	1	2	2	21
		Practice	e School - I (PS11	01) – (4 to 6 Week	s Duration)	1		4
	Transportation Engineering	Geotechnical Engineering	DE-I	OE-I	Understanding and Managing Conflict	Introduction to IOT	Automation Project	
V	CE1109	CE1108			CC1105	EE1111	PR1101	
	(3 0 2)	(3 0 2 0)			$(2\ 0\ 0\ 0)$			
	4	4	4	4	2	2	2	22
VI	Design of RC Structures	Digital Surveying and Mapping	DE-II	DE/OE/Minor Project	Critical Thinking for Decisions at Workplace	Emerging Tech Week		
	CE1113	CE1102			CC1106			
	(3 0 2 0)	(3 0 2)			$(2\ 0\ 0\ 0)$			
	4	4	4	4	2	2		20
	DE-III	DE-IV	DE-V	OE-II	Minor Project			
VII					PR1103			
VII								
, , , , , , , , , , , , , , , , , , , 	4	4	4	4	4			20
	4	4 actice School - II /	4 /Entrepreneurial P	4 Project/Research Pro	4 vject/Semester at a	Partner University		20
VIII	4 Pr	4 actice School - II	4 /Entrepreneurial P	4 Project/Research Pro 16	4 ject/Semester at a	Partner University		20 16

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B. Tech (CE) (Batch: 2019-2023)													
Course Code	Course Name	Page No.											
ES1101	Computational Data Analysis	6											
ES1102	Design and Prototyping	7											
AS1101	Experimental Science-I	8											
CC1101	Fundamentals of Communication	9											
ES1103	Calculus and Applied Mechanics	10											
ES1104	Fundamentals of Automation Engineering	11											
CS1101	Object Oriented Programming	12											
ES1105	Energy and Environmental Studies	13											
CC1102	Critical Thinking and Storytelling	14											
AS1102	Scientific Perspectives	15											
CE1101	Civil Engineering Materials	16											
ES1106	Computational Engineering Analysis-I	17											
ES1107	Engineering Measurements and Machines	18											
CE1103	Fluid Mechanics and Hydraulic Engineering	19											
CC1103	Perspectives on Contemporary Issues	20											
IL1101	Management Perspectives	21											
CE1112	Construction Project Management	22											
ES1109	Computational Engineering Analysis-II	23											
CE1104	Structural Analysis	24											
CE1105	Construction Technology	25											
CE1106	Civil Engineering CAD Lab	26											
CC1104	Communication and Identity	27											
IL1102	Introduction to Design	28											
CE1109	Transportation Engineering	29											
CE1108	Geotechnical Engineering	30											
CC1105	Understanding and Managing Conflict	31											
EE1111	Introduction to IoT	32											
PR1101	Automation Project	33											
CE1113	Design of RC Structures	34											
CE1102	Digital Surveying and Mapping	35											
CC1106	Critical Thinking for Decisions at Workplace	36											

Course Name: Computational Data Analysis

ES1101.1.	Write Simple Python programs using various datatypes, control structures, decision
	statements, libraries, functions (M1)
ES1101.2.	Develop Python programs using Objects, Classes and Files (M1, M2)
ES1101.3.	Develop Programs for analyzing and interpreting Complex situations in various

- domains including sustainable development by combining various Linear Algebra, Statistics and Other Problem-Solving Techniques (M3)
- ES1101.4. Model Complex systems as Linear simultaneous equations and analyze the same using Matrix methods (M1)
- ES1101.5. Model Data as matrices and Find Eigen Values and Eigen Vectors and Apply the same for problem solving, e.g., ranking and performance analysis (M1)
- ES1101.6. Summarize and Visualize different datasets (M2)
- ES1101.7. Analyze and interpret different datasets using Discrete and Continuous Probability Distributions and Apply the same for problem solving, e.g., Goodness of Fit (M2)
- ES1101.8. Formulate and validate hypothesis with reference to different datasets (M2)
- ES1101.9. Apply correlation, regression, least square method and time series analysis for modeling, analysis, interpretation, and forecasting (M2)

Course Outcome		Correlation with program outcomes															Correlation with program	
																	outcomes	
	РО	PO PO<															PSO-	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
ES1101.1																		
ES1101.2											1							
ES1101.3					1	1					1			1				
ES1101.4			1		1	1				1	1							
ES1101.5			1		1	1				1	1			1				
ES1101.6					1	1		1			1		2					
ES1101.7		1	1		1	1		1			1		1	1				
ES1101.8		1	1		2	1		2			1		1	1				
ES1101.9		1	1		2	1		2		1	1		1	1				
Average	0.00	0.33	0.56	0.00	1.00	0.78	0.00	0.67	0.00	0.33	0.89	0.00	0.56	0.56	0.00	0.00	0.00	

Course Name: Design and Prototyping

ES1102.1.	Approach design challenges from the perspective of the user and offer innovative
	solutions effectively.

- ES1102.2. Communicate and work in team towards a common goal.
- ES1102.3. Think creatively towards a fun based, desirable solution.
- ES1102.4. Develop the projection views of the products with dimensions and scales.
- ES1102.5. Create the schematic diagram and isometric view of the parts using AutoCAD.
- ES1102.6. Fabricate prototype by combining the different parts.

Course						Correl	ation w	ith prog	gram ou	itcomes	5					Correlation		
Outcome																	with program	
																spe	specific	
																	outcomes	
	PO	PO P															PSO-	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
ES1102.1	2	1	1	1										2				
ES1102.2											1	1	1					
ES1102.3	2				2	1	1	1						2				
ES1102.4					1	1	1											
ES1102.5	1				2	1	1											
ES1102.6	2				2	1	1				1	1	1					
Average	1.17	0.17	0.17	0.17	1.17	0.67	0.67	0.17	0.00	0.00	0.33	0.33	0.33	0.67	0.00	0.00	0.00	

Course Name: Experimental Science-I

Course Outcomes: On successful completion of this course, the students will be able to:

AS1101.1.	analyze ferromagnetic properties of any magnetic material and differentiate Soft
	and hard materials.
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- AS1101.2. analyze thermoelectric effect of metal junctions due to temperature differences.
- AS1101.3. analyze nuclear radiation with respect to distance and thickness of absorbing media.
- AS1101.4. measure electrical properties e.g., specific resistance, time constant of various electrical components.
- AS1101.5. use Schroedinger equation and quantum mechanical approach to analyze behavior of the quantum particle under different potentials.
- AS1101.6. differentiate hard and soft water by determining its hardness of different water samples.
- AS1101.7. analyze conductivity of samples by different techniques such as volumetric titrations and conductometric.
- AS1101.8. determine properties of the lubricant/oil samples by Pensky-Martens and Red Viscometer.

Course						Correla	ation w	ith prog	gram ou	itcomes	3					Corre	lation
Outcome																with p	rogram
																spe	cific
								-			-					outc	omes
	PO	PO PO<															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
AS1101.1	1				1									1			
AS1101.2	1																
AS1101.3	1										1						
AS1101.4	1				1						1						
AS1101.5	1																
AS1101.6	1		1		1	1	1				1		1		1		
AS1101.7	1		1				1				1		1				
AS1101.8	1																
Average	1.00	0.00	0.25	0.00	0.38	0.13	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.13	0.13	0.00	0.00

Course Name: Fundamentals of Communication

- CC1101.1. Identify different cultural differences and their impact on communication.
- CC1101.2. Compose grammatically correct sentences and paragraphs.
- CC1101.3. Deliver effective oral presentations following appropriate kinesics and paralinguistic features.
- CC1101.4. Identify impact of cultural differences on communication.
- CC1101.5. Apply appropriate communication skills across settings, purposes, and audiences.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	5					Corre with pr spec	lation rogram cific omes
	PO 1	O PO PO </td <td>PSO- 2</td>															PSO- 2
CC1101.1									1		1		1				
CC1101.2																	
CC1101.3	1										1						
CC1101.4																	
CC1101.5	1										1		1				
Average	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.60	0.00	0.40	0.00	0.00	0.00	0.00

Course Name: Calculus and Applied Mechanics

- ES1103.1. apply analytical techniques to determine forces in structures
- ES1103.2. use commercial software (STAAD Pro.) to simulate a structure/frame and determine force in the members
- ES1103.3. model physical phenomena using calculus and solve using appropriate method
- ES1103.4. apply Newton's laws of motion and understand the concepts of dynamics concepts (force, momentum, work and energy)
- ES1103.5. interpret the geometrical significance of differential and integral calculus
- ES1103.6. solve problems of vector differentiation and integration
- ES1103.7. calculate the buoyant forces of objects with various shape and carryout the stability analysis
- ES1103.8. apply the concept of partial differentiation to solve optimization problems

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	\$					Corre with pr	elation rogram cific
																outc	omes
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO- 1	PSO- 2
ES1103.1						2					1		2				
ES1103.2						2	2				1						
ES1103.3	1				1	2	2		1		2		1				
ES1103.4	2				1	2	2				1						
ES1103.5	1				1	2	2										
ES1103.6						1	1										
ES1103.7						1	1		1		1		2				
ES1103.8						2	1				1		1				
Average	0.50	0.00	0.00	0.00	0.38	1.75	1.38	0.00	0.25	0.00	0.88	0.00	0.75	0.00	0.00	0.00	0.00

Course Name: Fundamentals of Automation Engineering

Course Outcomes: On successful completion of this course, the students should be able to:

- ES1104.1 Analyze electrical circuits using network theorems,
- ES1104.2 Measure electrical parameters of passive as well as active electrical components,
- ES1104.3 Design rectifier circuit using semiconductor devices,
- ES1104.4 Design filters for power conditioning,
- ES1104.5 Design and test a linear power supply for given specifications
- Es1104.6 Design and build Printed Circuit Boards,
- ES1104.7 Use electrical safety practices while working on electrical projects,
- Es1104.8 Formulate mathematical models for basic electro-mechanical systems,
- ES1104.9 Design and simulate a basic analog open-loop control system,
- ES1104.10 Evaluate and simplify Boolean functions and design the minimized logic using logic gates.
- ES1104.11 Design basic combinational and sequential circuits with minimum complexity,
- ES1104.12 Implement combinational circuit using simulation tools.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes						Correlat program outc	ion with specific omes
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO-1	PSO-2
ES1104.1					2			1									
ES1104.2						2								1			
ES1104.3					1			1									
ES1104.4					2							1		1			
ES1104.5					1							1		1			
ES1104.6							1		1			1		1			
ES1104.7	2						2						1				
ES1104.8	2				2			2						2			
ES1104.9					1							1		1			
ES1104.10																	
ES1104.11	2				2							1					
ES1104.12						2			2			1	1	1			
Average	0.50	0.00	0.00	0.00	0.92	0.33	0.25	0.33	0.25	0.00	0.00	0.50	0.17	0.67	0.00	0.00	0.00

Course Name: Object Oriented Programming

Course Outcomes: On successful completion of this course, the students should be able to:

- CS1101.1. Develop Java Programs with the concepts of primitive data types, strings and arrays.
- CS1101.2. Develop Java Programs using Object Oriented Programming Principles such as Classes, Objects, Data Abstraction, Data Encapsulation, Overloading, Overriding, Polymorphism, Inheritance, and Interfaces.
- CS1101.3. Design, develop and debug programs in Core Java using coding and documentation standards.
- CS1101.4. Incorporate exception handling in Java Programs.
- CS1101.5. Use JDBC API connectivity in between Java Programs and database.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	3					Corre with p spec	elation rogram cific omes
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO-	PSO- 2
	-				24	20	22				° a		Ű	<i>,</i> u		-	-
CS1101.1					1	1	1							1			
CS1101.2																	
CS1101.3					1	1					1	1		1			
CS1101.4																	
CS1101.5											1	1					
Average	0.00	0.00	0.00	0.00	0.40	0.40	0.20	0.00	0.00	0.00	0.40	0.40	0.00	0.40	0.00	0.00	0.00

Course Name: Energy and Environmental Studies

Course Outcomes: On successful completion of this course, the student should be able to:

- ES1105.1. Relate renewable energy with ecology & environment
- ES1105.2. Explain the climate change and threat to biodiversity
- ES1105.3. Describe the various pollution sources and their impacts on Environment

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	3					Corre with pr spec	lation rogram cific omes
	PO 1	OPO															PSO- 2
ES1105.1	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															
ES1105.2		1									1						
ES1105.3	1				1												
Average	0.67	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00

Course Name: Critical Thinking and Storytelling

Course Outcomes: On successful completion of this course, the student should be able to:

- CC1102.1. Formulate intelligent questions to investigate.
- CC1102.2. Evaluate information and argument for correctness, consistency, relevance, and validity.
- CC1102.3. Compose well-structured and well-reasoned arguments.
- CC1102.4. Articulate and evaluate the impact of narratives.
- CC1102.5. Distinguish between facts, assumptions and opinion.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	3					Corre with pr spec	lation rogram cific omes
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO- 1	PSO- 2
CC1102.1			1					1									
CC1102.2			1			1							1				
CC1102.3											1						
CC1102.4													1				
CC1102.5													1				
Average	0.00	0.00	0.40	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.60	0.00	0.00	0.00	0.00

Course Name: Scientific Perspectives

- AS1102.1. Distinguish between science, pseudo-science and other forms of knowledge.
- AS1102.2. Distinguish between science, engineering, technology and mathematics and also identify the opportunities for integrating these disciplines.
- AS1102.3. Use the scientific approach to identify and understand the societal problems
- AS1102.4. Explain, Design and carry out Scientific studies

Course Outcome						Correla	ntion wi	ith prog	gram ou	itcomes						Corre with pr spec outco	lation cogram cific omes
	PO	PO <td>PSO-</td>															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
AS1102.1	1												1				
AS1102.2					1	1											
AS1102.3		1			1												
AS1102.4	1												1				
Average	0.50	0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00

Course Name: Civil Engineering Materials

Course Outcomes: On successful completion of this course, the students will be able to:

CE1101.1. characterize the construction materials.

- CE1101.2. determine the basic material properties and establish relationship between various elastic constants.
- CE1101.3. draw shear force and bending moment diagrams of beams.
- CE1101.4. determine the bending and shear stresses generated at various structural components.
- CE1101.5. carry out analysis of beams and columns and determine deflection.

Course						Correla	ation w	ith prog	gram ou	itcomes	5					Correlat	tion with
Outcome																prog	gram
																spe	cific
																outc	omes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-1	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b		
CE1101.1			1		2	1				1	1				1	1	1
CE1101.2					2	1						1				1	1
CE1101.3	1		1		1				1						1	2	2
CE1101.4	1		1		1				1						1	1	2
CE1101.5	1		1		1				1						1	1	2
Average	0.60	0.00	0.80	0.00	1.40	0.40	0.00	0.00	0.60	0.20	0.20	0.20	0.00	0.00	0.80	1.20	1.60

Course Name: Computational Engineering Analysis - I

Course Outcomes: On successful completion of this course, the students will be able to:

- ES1106.1. Solve ordinary differential equations through various techniques.
- ES1106.2. Determine the structural behavior of the body by determining the stresses, strains produced by the application of load.
- ES1106.3. Analyze the concept of buckling and be able to solve the problems related to column and struts.
- ES1106.4. Model the problems of column and struts mathematically in terms of ordinary differential equations and solve them using the appropriate method.
- ES1106.5. Simulate the solutions of the above-mentioned models of columns and struts.
- ES1106.6. Analyze a function of complex variables in terms of analyticity, poles and zeroes.
- ES1106.7. Find Laplace and inverse Laplace transforms of given function and use Laplace transform to solve ordinary differential equations.
- ES1106.8. Design and Evaluate the LC, RC & RL Networks using Foster's and Cauer Forms
- ES1106.9. Analyze stability criteria for electrical network using pole zero plot and routhhurwitz polynomials
- ES1106.10. Model and simulate electrical networks using Proteus simulator/ Virtual lab.

Course Outcome						Correl	ation w	ith prog	gram ou	itcomes	5					Corre with p spec	elation rogram cific omes
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO- 1	PSO- 2
ES1106.1					2	2	2	1	1		1	1					
ES1106.2					2			2									
ES1106.3					1			1							1		
ES1106.4		1			1	2	2	1	1	1	2	1					
ES1106.5							2	1		1							
ES1106.6					2												
ES1106.7					2	2	1	1	1		1	2					
ES1106.8					2	2		2			1	1		1			
ES1106.9					2	2		1			1	1					
ES1106.10	1						1		1								
Average	0.10	0.10	0.00	0.00	1.40	1.00	0.80	1.00	0.40	0.20	0.60	0.60	0.00	0.10	0.10	0.00	0.00

Course Name: Engineering Measurements and Machines

Course Outcomes: On successful completion of this course, the students be able to:

- ES1107.1. Evaluate suitable electrical and non-electrical instruments for measuring physical quantities.
- ES1107.2. Analyze the construction, characteristics and applications of various types of rotating machines.
- ES1107.3. Analyze the working of any mechanical and electrical machine using mathematical model.
- ES1107.4. Integrate the sensors for monitoring and automation of electrical and mechanical systems.
- ES1107.5. Design electro-mechanical machines as per Indian standards.

Course						Correla	ation w	ith prog	gram ou	itcomes	5					Corre	lation
Outcome																with pi	rogram
																spec	
																outco	Jines
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1107.1	2				2	1	1				1	1	1	1			
ES1107.2		1			1	1	1	1									
ES1107.3					1	2	1	1	1		1						
ES1107.4	1	1	1		1	1	1	1	1		1		1				
ES1107.5	1		1	1	1	1	1	1	1		1	1					
Average	0.80	0.40	0.40	0.20	1.20	1.20	1.00	0.80	0.60	0.00	0.80	0.40	0.40	0.20	0.00	0.00	0.00

Course Name: Fluid Mechanics and Hydraulics Engineering

Course Outcomes: On successful completion of this course, the students should be able to:

- CE1103.1. Identify, measure, and compute fluid properties and establish relationship between them.
- CE1103.2. Compute force of buoyancy on a partially or fully submerged body and analyze the stability of a floating body.
- CE1103.3. Evaluate pressure drop in pipe flow using Hagen-Poiseuille's equation for laminar flow in a pipe.
- CE1103.4. Apply fundamental principles of fluid mechanics for the solution of practical civil engineering problems of water conveyance in pipes, pipe networks, and open channels.

Course Outcome						Correla	ation wi	ith prog	gram ou	itcomes						Corre with pr spec	lation rogram cific omes
	PO 1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															PSO- 2
CE1103.1	1	1	1		1	1	1	1	1				1	1		1	1
CE1103.2					1	1	1	1	1							1	
CE1103.3				1	1	1		1									
CE1103.4				1	1	1	1					1				2	2
Average	0.25	0.25	0.25	0.50	1.00	1.00	0.75	0.75	0.50	0.00	0.00	0.25	0.25	0.25	0.00	1.00	0.75

Course Name: Perspectives on Contemporary Issues

- CC1103.1. Identify different perspectives objectively.
- CC1103.2. Explain interconnectedness of the issues and their impact at micro and macro levels.
- CC1103.3. Recognize their own beliefs, biases, claims and assumptions.
- CC1103.4. Evaluate sources, argue and defend effectively.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	3					Corre with pr spec outco	lation cogram cific omes
	PO 1	PO 2aPO 2bPO 2cPO 3aPO 3bPO 3cPO 4aPO 4bPO 4cPO 5aPO 5bPO 6PO 7a															PSO- 2
	1	2a	20	20	Ja	50	50	4 a	40	40	Ja	50	0	7 a	70	1	2
CC1103.1	1		1					1			1	1					
CC1103.2						1					1	1	1				
CC1103.3											1	1	1				
CC1103.4	1		1									1	1				
Average	0.50	0.00	0.50	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.75	1.00	0.75	0.00	0.00	0.00	0.00

Course Code: IL1101

Course Name: Management Perspectives

- IL1101.1. Comprehend the importance of management and its functional areas in businesses and also its interaction with technology.
- IL1101.2. Highlight specific external and internal issues impacting businesses.
- IL1101.3. Integrate and analyze multiple dimensions of management aspects to solve business problems.
- IL1101.4. Evaluate the aspects that management might consider when evaluating technical and engineering projects such as planning and scheduling, personnel management, cost control etc. from a management perspective

Course						Correla	ation w	ith prog	gram ou	itcomes	5					Corre	lation
Outcome																with pi	rogram
																spec	cific
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	DO	PO P															DEC
	PO	POPOPOPOPOPOPOPOPOPOPOPO12a2b2c3a3b3c4a4b4c5a5b67a															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
IL1101.1	1				1												
IL1101.2	1	1											1				
		_											_				
II 1101.3	2		1		1						1		1				
12110110	-		-		-						-		-				
II 1101 /	1			1							2	1					
121101.4	1			L T							2	1					
A	4.25	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.25	0.50	0.00	0.00	0.00	0.00
Average	1.25	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.25	0.50	0.00	0.00	0.00	0.00

Course Name: Construction Project Management

- CE1112.1. Calculate the estimated cost of the project
- CE1112.2. Compute the Benefit cost ratio of various type of projects.
- CE1112.3. Asses the risks in various Civil Engineering projects.
- CE1112.4. Analyze the project schedule by CPM and PERT.
- CE1112.5. Evaluate various types of contracts.
- CE1112.6. Develop various methods of safety in various construction projects.
- CE1112.7. Incorporate sustainability in project planning and execution.
- CE1112.8. Develop project scheduling using M S project.

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Course						Correla	ation wi	ith prog	gram ou	itcomes						Cori	relation
Outcome																with	program
																sp	ecific
																out	comes
	РО	PO	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1 2a 2b 2c 3a 3b 3c 4a 4b 4c 5a 5b 6 7a 7a															1	
CE1112.1	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															1
CE1112.2	1	1 1 1 1 1 1 1 1														1	1
CE1112.3		2			1			1									1
CE1112.4	1				2	1		2				1	1			2	2
CE1112.5	1		1		1	1		2					2			1	1
CE1112.6		2	2		1				1				1				
CE1112.7	1	2		1	1				1				1				
CE1112.8	1	1				1	1	1					1			1	2
Average	0.75	0.88	0.38	0.13	1.00	0.50	0.38	0.88	0.38	0.00	0.00	0.13	0.88	0.00	0.00	0.75	1.00

Course Name: Computational Engineering Analysis – II

- ES1109.1. Classify various types of partial differential equations and solve them through various analytical and numerical methods.
- ES1109.2. Formulate and analyze differential equations especially Navier stokes and energy equations and use numerical methods for solving the same.
- ES1109.3. Use Numerical method for solving partial differential equations using finite difference method.
- ES1109.4. Find Fourier and inverse Fourier transforms of given function and use Fourier transform to solve partial differential equations.
- ES1109.5. Find Z-transform and inverse Z-transforms of given functions and use them to analyze control systems.
- ES1109.6. Design and analyse various types of filters and attenuators to minimize power losses and improve signal quality.
- ES1109.7. Solve problems involving vertex and edge connectivity, planarity and crossing numbers.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	5					Corre with pr	lation ogram
																outco	omes
	PO 1	PO <td>PSO-</td> <td>PSO-</td>														PSO-	PSO-
5044004	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														70	1	2
ES1109.1	1	1 2a 2b 2c 3a 3b 3c 4a 4b 4c 5a 5b 6 7a 1 1 1 1															
ES1109.2	2		2		2	2	1	2			1		1	2			
ES1109.3						1	2										
ES1109.4					2	2		1			1						
ES1109.5	1		1		2	2		1			1			1			
ES1109.6		1				1	2			2				1			
ES1109.7						1	2	2						1			
Average	0.57	0.14	0.43	0.00	1.00	1.43	1.00	1.00	0.00	0.29	0.57	0.00	0.14	0.71	0.00	0.00	0.00

Course Name: Structural Analysis

Course Outcomes: On successful completion of this course, the students will be able to:

- CE1104.1. identify statically determinate and indeterminate structures and determine forces in members of trusses.
- CE1104.2. determine the bending moment at any section and reaction at support of arches.
- CE1104.3. determine tension in cables taking into considerations the temperature variation and support slippage.
- CE1104.4. draw influence line diagrams for beams, floor girders, arches and trusses.
- CE1104.5. analyze and determine force and displacement response of any given structure subjected to various loads.

Course Outcome						Correla	ation wi	ith prog	gram ou	itcomes	;					Corr with sp out	relation program ecific comes
	PO 1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															PSO-2
CE1104.1			1		1	1										1	1
CE1104.2			1		1	1			1							1	1
CE1104.3			1		1	1										1	1
CE1104.4					1	1			1							1	1
CE1104.5			1		1	1			1		1				1	1	2
Average	0.00	0.00	0.80	0.00	1.00	1.00	0.00	0.00	0.60	0.00	0.20	0.00	0.00	0.00	0.20	1.00	1.20

Course Name: Construction Technology

Course Outcomes: After course completion, the student will be able to

- CE1105.1 Develop the basic knowledge of building components, types of foundations, dead and live loads and design of strip footing for buildings
- CE1105.2 Apply knowledge in the selection of appropriate type of masonry, mortar, damp proof course, stair, plumbing, form work and building finishing items

CE1105.3 Design concrete mixes as per guidelines of Indian Standards

CE1105.4 Assess the behavior of concrete at fresh and hardened state

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	3					Corre wi prog spec	lation ith gram cific omes
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO- 1	PSO- 2
CE1105.1	1				1		1	1				1		1		1	1
CE1105.2	1			1		1		1				1		1		1	1
CE1105.3	1		1	1		1		1	1	1		1				2	1
CE1105.4	1				1						1				1		1
Average	1.00	0.00	0.25	0.50	0.50	0.50	0.25	0.75	0.25	0.25	0.25	0.75	0.00	0.50	0.25	1.00	1.00

Course Name: Civil Engineering CAD Lab Engineering

- CE1106.1 Interpret conventional sign, symbols and working drawings of various civil engineering structures.
- CE1106.2 Develops basic drawing skills; create multilayer architectural and working drawings.
- CE1106.3 Plan and draw Civil Engineering Buildings as per aspect and orientation.
- CE1106.4 Use the AutoCAD commands for drawing 2D & 3D building drawings required for different Civil engineering applications.
- CE1106.5 Use software (AutoCAD) to prepare detailed drawing of residential and public buildings.

Course						Comole	tion m	th measure	-	taamaa						Com	lation
Course						Correla	uton w	im prog	gram ou	licomes						Corre	ation
Outcome																with p	rogram
																spe	cific
																oute	omes
	PO	D PO PO <t< td=""><td>PSO-</td></t<>															PSO-
	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															$\frac{1}{2}$
	1	Za	20	20	Ja	30	30	4a	40	40	Ja	50	0	/a	70	1	2
CE1106.1	1																
CE1106.2					1				1								
CE1106.3													1				
CE1106.4																1	2
CE1106.5							1									1	1
Average	0.20	0.00	0.00	0.00	0.20	0.00	0.20	0.00	0.20	0.00	0.00	0.00	0.20	0.00	0.00	0.40	0.60

Course Name: Communication and Identity

- CC1104.1. Analyse their personal identities, both private and social
- CC1104.2. Identify their different values, strengths and areas of professional interest
- CC1104.3. Articulate their personal statement and use it to craft an influential pitch
- CC1104.4. Express themselves through various communication formats on different platforms

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	3					Corre with pr spec	elation rogram cific omes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1104.1													1	1			
CC1104.2	1		2	1										2			
CC1104.3													1				
CC1104.4													2				
Average	0.25	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.00

Course Code: IL1102

Course Name: Introduction to Design

- IL1102.1. Identify the user and build persona of the
- IL1102.2. Sketch their ideas on paper to visualize and assess viability.
- IL1102.3. Create a plan for process and management to materialize the desired idea.
- IL1102.4. Test the material for possibilities and capabilities.
- IL1102.5. Develop skills of joinery, material manipulation and various hand tools.
- IL1102.6. Develop technical and narrative skills useful for both film and animation.
- IL1102.7. Develop troubleshooting and problem-solving skills.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	5					Corre with pr spec	lation rogram cific omes
	РО	PO	PO	РО	РО	РО	РО	РО	РО	PO	PO	РО	РО	PO	РО	PSO-	PSO-
	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															2
IL1102.1	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															
IL1102.2	2						1						2				
IL1102.3	1						1	1						2			
IL1102.4	1						1	1									
IL1102.5							1	1									
IL1102.6	2						1						1				
IL1102.7	1		1			1	1										
Average	1.14	0.00	0.14	0.00	0.00	0.14	0.86	0.43	0.14	0.14	0.00	0.00	0.57	0.43	0.00	0.00	0.00

Course Name: Transportation Engineering

Course Outcomes: On successful completion of this course, the students should be able to:

CE1109.1: Plan and design the alignment of highway

CE1109.2: Characterize highway construction materials

CE1109.3: Design geometric features of highway

CE1109.4: Design runway lengths

CE1109.5: Design super elevation and turnout of railway track

CE1109.6: Apply urban transport management plan for cities

Course Outcome						Correla	ntion wi	ith prog	gram ou	tcomes						Corre with pr spec	lation rogram cific omes
	PO 1	OPO <td>PSO- 1</td> <td>PSO- 2</td>														PSO- 1	PSO- 2
CE1109.1	2	2a 2b 2c 3a 3b 3c 4a 4b 4c 5a 5b 6 7a 7 2 1 2 1 1 1 2 1 1														1	2
CE1109.2	1	2		1				1	1	1	1			1		1	2
CE1109.3	1		1		3				1			1		1		3	
CE1109.4	1		1		1							1		1		2	2
CE1109.5	1		1		1							1		1		2	
CE1109.6	2	2		2				1			1	1	1		1	1	2
Average	1.33	0.67	0.50	0.67	1.17	0.17	0.00	0.33	0.50	0.17	0.33	1.00	0.33	0.67	0.17	1.67	1.33

Course Name: Geotechnical Engineering

Course Outcomes: On successful completion of this course, the students will be able to:

- CE1108.1. assess index properties of different soil types.
- CE1108.2. evaluate the effect of pore water and seepage on the soil strength.
- CE1108.3. estimate vertical stress distribution beneath the foundation on account of superstructure load, up to certain depth.
- CE1108.4. calculate the shear strength of soil under different configurations of principal and shear stresses.
- CE1108.5. determine the compaction characteristics, optimum water content and maximum dry density of soil.
- CE1108.6. determine the consolidation characteristics of different type of soils and estimate the settlement under superstructure loads.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	;					Corre with pr spec	lation rogram cific omes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$														1	2
CE1108.1					2	1				1				1	1	1	1
CE1108.2					1	1	1	1	1	1				1	1	1	1
CE1108.3			1		2	1	2	1	1	1				1	1	1	2
CE1108.4	1		2	1	2	1	1	2	1	1	1			1	1	1	2
CE1108.5					1				2					1	1	1	1
CE1108.6	1		2	1	1	1		1		1	1	1		1	1	1	2
Average	0.33	0.00	0.83	0.33	1.50	0.83	0.67	0.83	0.83	0.83	0.33	0.17	0.00	1.00	1.00	1.00	1.50

Course Name: Understanding and Managing Conflict

- CC1105.1. Define a group and explain the stages of group development
- CC1105.2. Describe conflict and explain types and causes of conflict
- CC1105.3. Use inquiry and advocacy to engage with groups
- CC1105.4. Give and receive feedback effectively
- CC1105.5. Identify sources of conflict and manage them using difference conflict handling styles

~	Completion with an one of the second															~	
Course						Correl	ation w	ith prog	gram ou	tcomes						Correlation	
Outcome																with program	
outointe																in program	
																specific	
																outcomes	
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2.	21	2.	2.	21	2.	4.	41-	4.	5.	51	(7.	71	1	2
	1	Za	20	2C	5a	30	3C	4a	4D	4C	5a	30	0	7a	70	1	2
CC110E 1	1										2		1				
CC1105.1	1										2		1				
CC110E 2	1							1									
CC1105.2	T							T									
CC1105 3	1		1						1		2	1	1				
CC1105.5	1		1 ¹						-		2	-	-				
CC1105 /	1										1		1				
CC1105.4	1										-		-				
CC1105.5	1										1	1	1				
001105.5	-										-	-	-				
A	1 00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1 20	0.40	0.00	0.00	0.00	0.00	0.00
Average	1.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1.20	0.40	0.80	0.00	0.00	0.00	0.00

Course Name: Introduction to IoT

Course Outcomes: On successful completion of this course, the students should be able to:

- EE1111.1. Interface the Analog and Digital sensors to Node-MCU
- EE1111.2. Develop Embedded C programs to read sensor data and upload to public cloud platform.
- EE1111.3. Use Python-based IDE (integrated development environments) for the Raspberry Pi
- EE1111.4. Interface Raspberry Pi with I/O devices.
- EE1111.5. Visualize sensor data uploaded on public cloud.
- EE1111.6. Apply standard protocol(s) for implementation of IoT Systems.
- EE1111.7. Analyze and Improve existing systems with innovative IoT based approaches.

Course Outcome		Correlation with program outcomes															Correlation with program specific outcomes	
	РО 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO- 1	PSO- 2	
EE1111.1								1		1	1							
EE1111.2							1	1	1		1							
EE1111.3								1		1								
EE1111.4								1	1	1	1		1	1				
EE1111.5							1	1		1	1			1				
EE1111.6									1	1			1	1				
EE1111.7									1	1	1							
Average	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.71	0.57	0.86	0.71	0.00	0.29	0.43	0.00	0.00	0.00	

Course Code: PR1101

Course Name: Automation Project

Course Outcomes: On successful completion of this course, the students should be able to:

- PR1101.1. Design and implement a complete project in IoT/Automation using microcontroller/SOC interfaced with sensors or any other automation hardware/tools.
- PR1101.2. Apply anyone/more standard data communication/IoT protocol(s).
- PR1101.3. Use cloud servers for data streaming/logging and analytic techniques.
- PR1101.4. Implement algorithms/signal processing using the data at edge/cloud.
- PR1101.5. Deploy techniques to conserve bandwidth/energy/other resources and achieve cost economy for project.

Course Outcome		Correlation with program outcomes															Correlation with program specific outcomes	
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO-	PSO-	
	1	Za	20	20	Ja	50	50	4 a	40	40	Ja	50	0	/ a	70	1	2	
PR1101.1	2				2					2		2		3				
PR1101.2						2												
PR1101.3							2											
PR1101.4	2								2									
PR1101.5					2		2											
Average	0.80	0.00	0.00	0.00	0.80	0.40	0.80	0.00	0.40	0.40	0.00	0.40	0.00	0.60	0.00	0.00	0.00	

Course Name: Design of RC Structures

- CE1113.1: Understand material properties and design methodologies for Concrete and Steel structures
- CE1113.2: Analyse and design reinforced concrete elements like beam and slab
- CE1113.3: Analyse and design of compression members
- CE1113.4: Analyse load effects on staircases and design

Course Outcome	Correlation with program outcomes															Correlation with program specific outcomes	
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO- 1	PSO- 2
CE1113.1	1	1			2		1			1		2			1	1	2
CE1113.2	1			1		1			1	1	1	1		2	1	2	1
CE1113.3	1			1		1			1	1	1	1		2	1	2	2
CE1113.4	1		1		2				1	1				1		1	1
Average	1.00	0.25	0.25	0.50	1.00	0.50	0.25	0.00	0.75	1.00	0.50	1.00	0.00	1.25	0.75	1.50	1.50

Course Name: Digital Surveying and Mapping

Course Outcomes: On successful completion of this course, the students should be able to:

CE1102.1: Operate modern survey equipment in the field for various civil engineering applications

CE1102.2: Apply the basic principles of surveying and mapping

CE1102.3: Use mathematical and computational skills for surveying and mapping

CE1102.4: Interpret survey data and compute areas and volumes

CE1102.5: Select the type of remote sensing technique / data for required purpose

CE1102.6: Use principles of Remote sensing, GIS and GPS to collect, map and retrieve spatial information.

Course						Correl	tion w	ith proc	rom ou	toomoo						Correlation		
Course						Coneia	ation w	iiii prog	grann ou	ncomes	•					conclation		
Outcome																with		
																program		
																	specific	
																	outcomes	
	DO	PO P															DCO	
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
CE1102.1	1		1	1			1				1			1		2	2	
CE1102.2	1		1	1	2		2			2					1	1	1	
CE1102.3	1	1		2	1	1	2		2		1			1		2	2	
CE1102.4	1	1		2				1		1	1	1	1			1	1	
CE1102.5	1	1	2		1											2	1	
CE1102.6	1	2	1		1		1	2			1	1		1	1	2	1	
Average	1.00	0.83	0.83	1.00	0.83	0.17	1.00	0.50	0.33	0.50	0.67	0.33	0.17	0.50	0.33	1.67	1.33	
Course Name: Critical Thinking for Decisions at Workplace

- CC1106.1. Apply techniques of Critical Thinking to analyse organizational problems through positive inquiry
- CC1106.2. Describe and analyse appropriate problem-solving and ethical decision-making processes
- CC1106.3. Choose the most effective and logical decision among multiple alternatives
- CC1106.4. Evaluate solutions and anticipate likely risks based on purpose, context and ethics

Course Outcome		Correlation with program outcomes															Correlation with program specific outcomes	
	PO <td>PSO-</td> <td>PSO-</td>													PSO-	PSO-			
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
CC1106.1	1										2		2					
CC1106.2	2					1		2					1					
CC1106.3									1		1	2	1					
CC1106.4							1	2				2						
Average	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00	

n wiai	IIX (D.		/ 5L /)•												
PO2a	PO2b	PO2c	PO3a	PO3b	PO3c	PO4a	PO4b	PO4c	PO5a	PO5b	PO6	PO7a	PO7b	PSO1	PSO2
0.33	0.56	0.00	1.00	0.78	0.00	0.67	0.00	0.33	0.89	0.00	0.56	0.56	0.00	0.00	0.00
0.17	0.17	0.17	1.17	0.67	0.67	0.17	0.00	0.00	0.33	0.33	0.33	0.67	0.00	0.00	0.00
0.00	0.25	0.00	0.38	0.13	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.13	0.13	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.60	0.00	0.40	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.38	1.75	1.38	0.00	0.25	0.00	0.88	0.00	0.75	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.92	0.33	0.25	0.33	0.25	0.00	0.00	0.50	0.17	0.67	0.00	0.00	0.00
0.00	0.00	0.00	0.40	0.40	0.20	0.00	0.00	0.00	0.40	0.40	0.00	0.40	0.00	0.00	0.00
0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.40	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.60	0.00	0.00	0.00	0.00
0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
0.00	0.15	0.00	0.00	0.08	0.15	0.00	0.08	0.08	0.08	0.00	0.08	0.00	0.00	0.08	0.00
0.17	0.33	0.33	1.00	0.50	0.33	0.00	0.00	0.17	0.17	0.50	0.33	0.00	0.00	1.33	2.00
0.00	0.00	0.00	1.00	0.43	0.29	1.00	0.29	0.29	0.00	0.00	0.57	0.43	0.00	1.43	1.00
0 1 0	0.00	0.00	1 10	1 00	0.00	1 00	0 40	0.20	0.00	0.00	0.00	0.10	0.10	0.00	0.00

Program Articulation Matrix (B. Tech CSE):

PO1

Course

Code

ES1101 0.00 0.33 0.56 0.00 1.00 0.78 0.00 0.67 0.00 0.33 0.89 0.00 0.56 0.56 0.00 0.00 ES1102 1.17 0.17 0.17 0.17 1.17 0.67 0.67 0.17 0.00 0.03 0.33 0.33 0.33 0.33 0.67 0.00 0.00 AS1101 1.00 0.00 0.25 0.00 0.33 0.13 0.33 0.33 0.33 0.43 0.67 0.00 0.00 0.33 0.33 0.33 0.33 0.43 0.40 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
ES1102 1.17 0.17 0.17 1.17 0.67 0.67 0.17 0.00 0.33 0.33 0.33 0.67 0.00 0.00 AS1101 1.00 0.00 0.25 0.00 0.33 0.13 0.13 0.13 0.13 0.13 0.13 0.00 0.00 0.33 0.33 0.33 0.33 0.67 0.00 0.00 AS1101 0.00 0.00 0.25 0.00 0.33 0.13 0.33 0.33 0.33 0.33 0.33 0.33 0.67 0.00 0.00 CC1101 0.40 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
AS1101 1.00 0.00 0.25 0.00 0.38 0.13 0.25 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
CC1101 0.40 0.00 0.00 0.00 0.00 0.00 0.00 0.20 0.00 0.60 0.00 0.40 0.00 0.00 0.00 ES1103 0.50 0.00 0.00 0.00 0.38 1.75 1.38 0.00 0.25 0.00 0.88 0.00 0.75 0.00 0.00 0.00 0.00 0.00 ES1104 0.50 0.00 0.00 0.00 0.92 0.33 0.25 0.33 0.25 0.00 0.88 0.00 0.75 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00
ES1103 0.50 0.00 0.00 0.38 1.75 1.38 0.00 0.25 0.00 0.88 0.00 0.75 0.00 0.00 0.00 ES1104 0.50 0.00 0.00 0.00 0.92 0.33 0.25 0.33 0.25 0.00 0.00 0.17 0.67 0.00 0.00 0.00 CS1101 0.00 0.00 0.00 0.40 0.40 0.20 0.00 0.00 0.40 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00
ES1104 0.50 0.00 0.00 0.92 0.33 0.25 0.33 0.25 0.00 0.00 0.17 0.67 0.00 0.00 CS1101 0.00 0.00 0.00 0.00 0.40 0.40 0.20 0.00 0.00 0.40 0.40 0.20 0.00 0.00 0.40 0.40 0.00 0.00 0.40 0.40 0.00 0.00 0.40 0.40 0.00 0.00 0.40 0.40 0.00 0.00 0.40 0.40 0.00 0.00 0.40 0.40 0.00 0.00 0.40 0.40 0.00 0.00 0.40 0.40 0.00 0.00 0.40	0.00 0.00 0.00 0.00 0.00 0.00
CS1101 0.00 0.00 0.00 0.40 0.40 0.20 0.00 0.00 0.40 0.40 0.00 0.00 ES1105 0.67 0.33 0.00 0.00 0.33 0.33 0.00 0.00 0.00 0.33 0.00 0.00 0.00 0.33 0.00	0.00 0.00 0.00 0.00
ES1105 0.67 0.33 0.00 0.03 0.33 0.03 0.00 0.00 0.03 0.00	0.00 0.00 0.00 0.00
CC1102 0.00 0.00 0.40 0.00 0.00 0.20 0.00 0.00 0.20 0.00 0.20 0.00	0.00 0.00 0.00
AS1102 0.50 0.25 0.00 0.00 0.50 0.25 0.00 0.00	0.00
	0.00
CS1301 0.08 0.00 0.15 0.00 0.08 0.15 0.00 0.08 0.08 0.08 0.08 0.00 0.08 0.00 0.00 0.00 0.08	
CS1102 0.83 0.17 0.33 0.33 1.00 0.50 0.33 0.00 0.00 0.17 0.17 0.50 0.33 0.00 0.00 1.33	2.00
CS1103 0.00 0.00 0.00 0.00 1.00 0.43 0.29 1.00 0.29 0.29 0.00 0.00 0.57 0.43 0.00 1.43	1.00
ES1106 0.10 0.10 0.00 0.00 1.40 1.00 0.80 1.00 0.40 0.20 0.60 0.60 0.00 0.10 0.10 0.00	0.00
ES1107 0.80 0.40 0.40 0.20 1.20 1.20 1.00 0.80 0.60 0.00 0.80 0.40 0.40 0.20 0.00 0.00	0.00
CC1103 0.50 0.00 0.50 0.00 0.00 0.25 0.00 0.25 0.00 0.00	0.00
IL1101 1.25 0.25 0.25 0.25 0.25 0.50 0.00 0.00 0	0.00
CS1310 0.00 0.00 0.00 0.00 1.00 1.00 1.00 0.25 0.00 0.00 0.00 0.00 0.00 0.00 0	0.25
CS1105 1.25 0.00 0.67 0.00 1.00 0.00 0.00 0.42 0.58 0.00 0.00 0.00 0.00 0.42 0.08 1.50	1.83
CS1106 1.00 0.36 0.18 0.00 0.64 0.82 0.91 0.55 0.64 0.00 0.45 0.09 0.45 0.00 0.00 1.18	1.18
CS1107 0.60 0.70 0.40 0.30 0.30 0.50 0.30 0.40 0.40 0.30 0.40 0.20 0.40 0.20 0.40 1.20	1.20
ES1109 0.57 0.14 0.43 0.00 1.00 1.43 1.00 1.00 0.00 0.29 0.57 0.00 0.14 0.71 0.00 0.00	0.00
CC1104 0.25 0.00 0.50 0.25 0.00 0.00 0.00 0.00	0.00
IL1102 1.14 0.00 0.14 0.00 0.14 0.86 0.43 0.14 0.14 0.00 0.00 0.57 0.43 0.00 0.00	0.00
CS1303 0.00 0.00 0.00 1.00 1.00 1.00 0.80 0.20 0.00 0.00 0.20 0.20 0.20 0	0.20

CS1108	1.44	0.00	0.00	0.00	1.44	1.00	0.44	0.67	0.67	0.00	0.56	0.56	0.56	0.00	0.44	2.11	2.11
CS1110	0.70	0.30	0.60	0.50	0.60	0.80	0.60	0.80	1.00	0.30	1.00	1.10	0.60	1.10	1.10	1.90	2.00
CC1105	1.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1.20	0.40	0.80	0.00	0.00	0.00	0.00
EE1111	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.71	0.57	0.86	0.71	0.00	0.29	0.43	0.00	0.00	0.00
CS1111	0.40	0.00	0.00	0.40	0.50	0.50	0.80	0.40	0.40	0.80	0.50	1.00	0.70	0.50	0.80	1.70	2.00
CS1112	1.00	0.00	0.00	0.00	1.60	0.60	1.60	0.20	0.20	0.00	0.40	0.20	0.60	0.00	0.00	2.40	2.40
CS1113	1.08	0.46	0.46	0.46	1.00	1.00	0.46	0.00	0.62	0.00	0.62	0.92	0.31	0.62	0.31	1.85	1.85
CC1106	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00
PR1101	0.80	0.00	0.00	0.00	0.80	0.40	0.80	0.00	0.40	0.40	0.00	0.40	0.00	0.60	0.00	0.00	0.00
DE (1)																1.20	1.00
DE (2)																1.30	1.20
DE (3)																1.30	1.20
DE (4)																1.40	1.40
DE (5)																1.40	1.40
DE (6)																1.60	1.60
Total*	20.28	3.97	6.58	2.86	21.05	17.74	15.42	11.55	8.14	4.15	14.45	10.26	13.41	10.10	3.41	25.53	25.82
Program Articulation	С	Ν	Ν	N	С	С	AB	AB	AB	Ν	AB	AB	AB	AB	N	С	С
Expectation	С	Ν	N/AB	Ν	С	AB	AB	AB	N/AB	Ν	AB	AB	AB	AB	Ν	С	С

Description of levels of Program Articulation:

Novice (N) (Low)	 Knows objective facts, features, and rules for determining actions with respect to this PO/PSO without being context sensitive. Has studied the basic concepts.
Advanced beginner (AB) (Moderate)	 Recognizes common situations with respect to this PO/PSO that help in recalling which rules should be exercised, starts to recognize and handle situations not covered by given facts, features and rules. Has problem solving and repeated practice experience for common situations with respect to this PO/PSO.
Competent (C) (High)	 Performs most standard actions with respect to this PO/PSO without conscious application of rules after considering the whole situation. Handles new situations through the appropriate application of rules, can design systems. May lead. Has demonstrated this PO/PSO through repeated engagements in advanced problem solving, projects, extensive practice in common and exception situations, and participated in professional networks.

Calculation Criteria for the Program Articulation Levels:

Novice (N) (Low)	Total* < 8
Advanced beginner (AB) (Moderate)	8 ≤ Total* < 16
Competent (C) (High)	$Total^* \ge 16$

			JK Laksh	mipat University,	Jaipur			
			Institute of E	Ingineering and Te	echnology En sin serie s			
		C	Department of C	Computer Science	Engineering			
Somestar		U	burse Structure I	Courses	acii 2019-2023)			Cuedita
Semester	Computational	Design and	Euronimontal	Eundomentals				
1	Doto Analysis	Design and Destation	Experimental	Fundamentals				21
	Data Analysis	Prototyping	Science-1	OI				
	E01101	EC1100	101101	Communication				
		ES1102	AS1101					
	$(10s\ 2\ 0)$	(600)	(104)					
	10	6	3	2		a		
11	Calculus and	Fundamentals of	Object	Energy and	Critical	Scientific	IBM SP-I	20/21*
	Applied	Automation	Oriented	Environmental	Thinking and	Perspectives	(Python	
	Mechanics	Engineering	Programming	Studies	Storytelling		Programming)	
	ES1103	ES1104	CS1101	ES1105	CC1102	AS1102	CS1201	
	(6s 2 0)	(6s 2 0)	(104)	(100)	(200)			
	6	6	3	1	2	2	(0 2 0)	
							1	
TTT	Data	Theoretical	Computational	Engineering	Derenactives on	Managamant	IBM SP_II	22/25*
111	Structures	Foundation of	Engineering	Measurements	Contemporary	Perspectives	Data	22/25
	Structures	Computer	Analysis I	and Machines	Issues	reispeenves	Visualisation	
		Science	Anarysis-1	and Wachines	155005		Visualisation	
	CS1102	CS1103	ES1106	ES1107	CC1103	IL1101	CS1310	
	(3.0.2)	(310)	(312)	(304)		(Management	(2.0.2)	
	(3 0 2)	(310)	(312)		(201)	Week)	(202)	
	4	4	5	5	2	2	3	
IV	Design and	Database	Computer	Computational	Communication	Introduction	IBM SP-III	21/24*
	Analysis of	Systems	Architecture	Engineering	and Identity	to Design	(Enterprise	
	Algorithms		and	Analysis-II			Programming	
			Organization				using Java)	
	CS1105	CS1106	CS1107	ES1109	CC1104	IL1102	CS1303	
	(3 0 2)	(3 0 2)	(3 0 2)	(312)	(201)	(Design	(202)	
	4	4	4	5	2	week)	2	
	4	H Dreation	4 Sahaal I (DS11($\frac{3}{1} (4 + 5) \in W_{0.0}$	Duration) 1 Cm		3	
N7	Oneneting	Artificial		$\frac{1}{1} - (4100 \text{ weeks})$	Duration to			20
v	Systems	Artificial Intelligence and	UE-I	ond Managing		DE-I/IDM-		20
	Systems	Machino			101	51-1		
		Learning		Connec		(Cloud		
	~~~~	Learning		~~~~~		Computing)		-
	<u>CS1108</u>	CS1110		CC1105	EE1111	CS1304		-
	(302)	(3 0 2)		(200)	-	(302)		
	4	4	4	2	2	4		
VI	Computer	Compiler	DE-II/OE-	Critical	(Emerging	DE-III/IBM-	Automation	22
	Networks and	Design/Software	II/IBM-SP-V	Thinking for	Tech Week)	SP-VI (Big	Project	
	Distributed	Engineering	(Business	Decisions at		Data		
	Systems	001110/001110	Intelligence)	Workplace		Engineering)	<b>DD</b> 1101	-
	CSIIII	CS1112/CS1113	CS1305	CC1106		CS1313	PRII01	-
	(302)	(3 0 2)	(3 02)	(200)		(3 02)		-
	4	4	4	2	2	4	2	• •
VII	DE-IV	DE-V	DE-VI	OE-III	Minor			20
					Project/IBM-			
					SP-VII (AI			
					with IBM			
					watson)			
			4		PK1103			
<b>X7777</b>	4	4 4	4	4	4			14
VIII	Prac	cuce School - 11 /En	trepreneurial Pr	oject/Research Pr	oject/Semester at a	a partner Unive	rsity	16
				1 otal Credits				100-
								173*

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## Course Name: Computational Data Analysis

Course Outcomes: After course completion, the student will be able to

ES1101.1.	Write Simple Python programs using various datatypes, control structures, decision
	statements, libraries, functions (M1)
ES1101.2.	Develop Python programs using Objects, Classes and Files (M1, M2)
ES1101.3.	Develop Programs for analyzing and interpreting Complex situations in various
	domains including sustainable development by combining various Linear Algebra,
	Statistics and Other Problem-Solving Techniques (M3)
ES1101.4.	Model Complex systems as Linear simultaneous equations and analyze the same
	using Matrix methods (M1)
ES1101.5.	Model Data as matrices and Find Eigen Values and Eigen Vectors and Apply the
	same for problem solving, e.g., ranking and performance analysis (M1)
ES1101.6.	Summarize and Visualize different datasets (M2)
ES1101.7.	Analyze and interpret different datasets using Discrete and Continuous Probability
	Distributions and Apply the same for problem solving, e.g., Goodness of Fit (M2)
ES1101.8.	Formulate and validate hypothesis with reference to different datasets (M2)

ES1101.9. Apply correlation, regression, least square method and time series analysis for modeling, analysis, interpretation, and forecasting (M2)

Course						Correl	ation w	ith proc	ram ou	tcomes						Correl	ation with	
Course						Concia	ation w	in prog	,i ani ou	comes						Conter		
Outcome																pro	program	
																sp	specific	
																out	outcomes	
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-2	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1		
ES1101.1																		
ES1101.2											1							
ES1101.3					1	1					1			1				
ES1101.4			1		1	1				1	1							
ES1101.5			1		1	1				1	1			1				
ES1101.6					1	1		1			1		2					
ES1101.7		1	1		1	1		1			1		1	1				
ES1101.8		1	1		2	1		2			1		1	1				
ES1101.9		1	1		2	1		2		1	1		1	1				
Average	0.00	0.33	0.56	0.00	1.00	0.78	0.00	0.67	0.00	0.33	0.89	0.00	0.56	0.56	0.00	0.00	0.00	

#### Course Name: Design and Prototyping

ES1102.1	Approach design challenges from the perspective of the user and offer innovative
	solutions effectively.

- ES1102.2 Communicate and work in team towards a common goal.
- ES1102.3 Think creatively towards a fun based, desirable solution.
- ES1102.4 Develop the projection views of the products with dimensions and scales.
- ES1102.5 Create the schematic diagram and isometric view of the parts using AutoCAD.
- ES1102.6 Fabricate prototype by combining the different parts.

Course						Correl	ation w	ith prog	gram ou	tcomes						Correlation		
Outcome																with program		
																specific		
																outcomes		
	РО	РО	РО	РО	PO	РО	РО	РО	РО	РО	PO	РО	РО	PO	РО	PSO-	PSO-	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
ES1102.1	2	1	1	1										2				
ES1102.2											1	1	1					
ES1102.3	2				2	1	1	1						2				
ES1102.4					1	1	1											
ES1102.5	1				2	1	1											
ES1102.6	2				2	1	1				1	1	1					
Average	1.17	0.17	0.17	0.17	1.17	0.67	0.67	0.17	0.00	0.00	0.33	0.33	0.33	0.67	0.00	0.00	0.00	

## Course Name: Experimental Science-I

AS1101.1.	analyze ferromagnetic properties of any magnetic material and differentiate Soft
	and hard materials.
AS1101.2.	analyze thermoelectric effect of metal junctions due to temperature differences.
AS1101.3.	analyze nuclear radiation with respect to distance and thickness of absorbing media.
AS1101.4.	measure electrical properties e.g., specific resistance, time constant of various
	electrical components.
AS1101.5.	use Schrödinger equation and quantum mechanical approach to analyze behavior of
	the quantum particle under different potentials.
AS1101.6.	differentiate hard and soft water by determining its hardness of different water
	samples.

- AS1101.7. analyze conductivity of samples by different techniques such as volumetric titrations and conductometric.
- AS1101.8. determine properties of the lubricant/oil samples by Pensky-Martens and Red Viscometer.

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outco	omes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
AS1101.1	1				1									1			
AS1101.2	1																
AS1101.3	1										1						
AS1101.4	1				1						1						
AS1101.5	1																
AS1101.6	1		1		1	1	1				1		1		1		
AS1101.7	1		1				1				1		1				
AS1101.8	1																
Average	1.00	0.00	0.25	0.00	0.38	0.13	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.13	0.13	0.00	0.00

#### Course Name: Fundamentals of Communication

- CC1101.1. Identify different cultural differences and their impact on communication.
- CC1101.2. Compose grammatically correct sentences and paragraphs.
- CC1101.3. Deliver effective oral presentations following appropriate kinesics and paralinguistic features.
- CC1101.4. Identify impact of cultural differences on communication.
- CC1101.5. Apply appropriate communication skills across settings, purposes, and audiences.

	1															1	
Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spe	cific
																outc	omes
	РО	PO	PO	РО	РО	РО	PO	РО	PO	PO	PO	РО	РО	PO	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1101.1									1		1		1				
CC1101.2																	
CC1101.3	1										1						
CC1101.4																	
CC1101.5	1										1		1				
Average	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.60	0.00	0.40	0.00	0.00	0.00	0.00

## Course Name: Calculus and Applied Mechanics

- ES1103.1. apply analytical techniques to determine forces in structures
- ES1103.2. use commercial software (STAAD Pro.) to simulate a structure/frame and determine force in the members
- ES1103.3. model physical phenomena using calculus and solve using appropriate method
- ES1103.4. apply Newton's laws of motion and understand the concepts of dynamics concepts (force, momentum, work and energy)
- ES1103.5. interpret the geometrical significance of differential and integral calculus
- ES1103.6. solve problems of vector differentiation and integration
- ES1103.7. calculate the buoyant forces of objects with various shape and carryout the stability analysis
- ES1103.8. apply the concept of partial differentiation to solve optimization problems

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outco	omes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1103.1						2					1		2				
ES1103.2						2	2				1						
ES1103.3	1				1	2	2		1		2		1				
ES1103.4	2				1	2	2				1						
ES1103.5	1				1	2	2										
ES1103.6						1	1										
ES1103.7						1	1		1		1		2				
ES1103.8						2	1				1		1				
Average	0.50	0.00	0.00	0.00	0.38	1.75	1.38	0.00	0.25	0.00	0.88	0.00	0.75	0.00	0.00	0.00	0.00

#### Course Name: Fundamentals of Automation Engineering

- ES1104.1 Analyze electrical circuits using network theorems,
- ES1104.2 Measure electrical parameters of passive as well as active electrical components,
- ES1104.3 Design rectifier circuit using semiconductor devices,
- ES1104.4 Design filters for power conditioning,
- ES1104.5 Design and test a linear power supply for given specifications,
- ES1104.6 Design and build Printed Circuit Boards,
- ES1104.7 Use electrical safety practices while working on electrical projects,
- ES1104.8 Formulate mathematical models for basic electro-mechanical systems,
- ES1104.9 Design and simulate a basic analog open-loop control system,
- ES1104.10 Evaluate and simplify Boolean functions and design the minimized logic using logic gates,
- ES1104.11 Design basic combinational and sequential circuits with minimum complexity,
- ES1104.12 Implement combinatorial circuit using simulation tools.

Course						Correl	ation w	ith prog	ram out	comes						Correl	ation
Outcome																with pro	ogram
																spec	ific
																outco	mes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PO 7a	PO 7b	PSO-1	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6				2
ES1104.1					2			1									
ES1104.2						2								1			
ES1104.3					1			1									
ES1104.4					2							1		1			
ES1104.5					1							1		1			
ES1104.6							1		1			1		1			
ES1104.7	2						2						1				
ES1104.8	2				2			2						2			
ES1104.9					1							1		1			
ES1104.10																	
ES1104.11	2				2							1					
ES1104.12						2			2			1	1	1			
Average	0.50	0.00	0.00	0.00	0.92	0.33	0.25	0.33	0.25	0.00	0.00	0.50	0.17	0.67	0.00	0.00	0.00

#### Course Name: Object Oriented Programming

- CS1101.1. Develop Java Programs with the concepts of primitive data types, strings and arrays.
- CS1101.2. Develop Java Programs using Object Oriented Programming Principles such as Classes, Objects, Data Abstraction, Data Encapsulation, Overloading, Overriding, Polymorphism, Inheritance, and Interfaces.
- CS1101.3. Design, develop and debug programs in Core Java using coding and documentation standards.
- CS1101.4. Incorporate exception handling in Java Programs.
- CS1101.5. Use JDBC API connectivity in between Java Programs and database.

Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spe	cific
																outc	omes
	РО	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1101.1					1	1	1							1			
CS1101.2																	
CS1101.3					1	1					1	1		1			
CS1101.4																	
CS1101.5											1	1					
Average	0.00	0.00	0.00	0.00	0.40	0.40	0.20	0.00	0.00	0.00	0.40	0.40	0.00	0.40	0.00	0.00	0.00

# Course Name: Energy and Environmental Studies

- ES1105.1. Relate renewable energy with ecology & environment
- ES1105.2. Explain the climate change and threat to biodiversity
- ES1105.3. Describe the various pollution sources and their impacts on Environment

	1																
Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spe	cific
																outc	omes
	РО	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1105.1	1					1											
ES1105.2		1									1						
ES1105.3	1				1												
Average	0.67	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00

# Course Name: Critical Thinking and Storytelling

- CC1102.1. Formulate intelligent questions to investigate.
- CC1102.2. Evaluate information and argument for correctness, consistency, relevance, and validity.
- CC1102.3. Compose well-structured and well-reasoned arguments.
- CC1102.4. Articulate and evaluate the impact of narratives.
- CC1102.5. Distinguish between facts, assumptions and opinion.

Course						Correl	ation w	ith proc	tram OI	teomes						Corre	lation
Course						Conten	ation w	iui piog	grann Ou	comes						Conc	auton
Outcome																with p	rogram
																spe	cific
																outc	omes
	РО	РО	РО	PO	PO	РО	РО	РО	PO	РО	PO	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1102.1			1					1									
CC1102.2			1			1							1				
CC1102.3											1						
CC1102.4													1				
CC1102.5													1				
Average	0.00	0.00	0.40	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.60	0.00	0.00	0.00	0.00

#### Course Name: Scientific Perspectives

- AS1102.1. Distinguish between science, pseudo-science and other forms of knowledge.
- AS1102.2. Distinguish between science, engineering, technology and mathematics and also identify the opportunities for integrating these disciplines.
- AS1102.3. Use the scientific approach to identify and understand the societal problems
- AS1102.4. Explain, Design and carry out Scientific studies

Course						Correla	ation wi	ith prog	ram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outco	omes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
AS1102.1	1												1				
AS1102.2					1	1											
AS1102.3		1			1												
AS1102.4	1												1				
Average	0.50	0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00

#### Course Name: Python Programming

- CS1301.1. Design and program the standalone Python applications.
- CS1301.2. Use lists, tuples, and dictionaries in Python programs.
- CS1301.3. Identify Python object types.
- CS1301.4. Design structure and components of a Python program.
- CS1301.5. Use Python Control and Decision-making Structures for writing programs
- CS1301.6. Write long iterative programs into recursive code.
- CS1301.7. Build programs that related to text analytics.
- CS1301.8. Build small graphics and animation programs.
- CS1301.9. Design machine learning model to perform data analysis.
- CS1301.10. Build own Python packages or modules for reusability.
- CS1301.11. Read and write files in Python.
- CS1301.12. Use Data Handling Techniques of Python
- CS1301.13. Use exception handling in Python applications for error handling, find syntax errors

Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	PO	РО	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1301.1	1																
CS1301.2											1						
CS1301.3							1										
CS1301.4																	
CS1301.5										1							
CS1301.6																	
CS1301.7							1									1	
CS1301.8			1														
CS1301.9						1											
CS1301.10			1														
CS1301.11																	
CS1301.12									1								
CS1301.13													1				
Average	0.08	0.00	0.15	0.00	0.00	0.08	0.15	0.00	0.08	0.08	0.08	0.00	0.08	0.00	0.00	0.08	0.00

#### Course Name: Data Structures

- CS1102.1. Write programs for performing basic operations like insertion, deletion, searching, sorting, merging, traversal etc. on various data structures like array, queue, stack, linked list, tree, graph.
- CS1102.2. Use and design appropriate data structures for solving a variety of computational problem.
- CS1102.3. Develop test cases for their programs and debug the code.
- CS1102.4. Analyze the algorithms in terms of asymptotic time and space complexity.
- CS1102.5. Implement and compare various searching and sorting algorithms
- CS1102.6. Convert a recursive algorithm to non-recursive algorithm.

																1	
Course						Correla	ation w	ith prog	ram ou	tcomes						Corre	lation
Outcome																with p	rogram
																sne	rific
																spec	
																outco	omes
	РО	PO	РО	PO	РО	РО	РО	РО	РО	РО	PO	РО	РО	PO	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1102.1	1		1		1	1						1					2
CS1102.2			1		1	1										2	2
CS1102.3	2			1	1	1				1			1				2
CS1102.4		1			1		1					2				2	2
CS1102.5	1				1		1									2	2
CS1102.6	1			1	1						1		1			2	2
Average	0.83	0.17	0.33	0.33	1.00	0.50	0.33	0.00	0.00	0.17	0.17	0.50	0.33	0.00	0.00	1.33	2.00

Course Name: Theoretical Foundation of Computer Science

Course Outcomes: On successful comp	oletion of this course,	the students will be able to:
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- CS1103.1. construct and validate simple computing models which play a crucial role in compiler design, algorithms, etc.
- CS1103.2. construct conceptual models using discrete mathematics in various application areas such as linguistic, business, internet, etc.
- CS1103.3. develop problem solving and critical thinking skills to solve complex computing problems
- CS1103.4. use logics and proofs in order to read, comprehend and construct mathematical arguments
- CS1103.5. develop mathematical models of computation and describe how they relate to formal languages
- CS1103.6. relate the basic difference between deterministic and nondeterministic computing machines
- CS1103.7. Interpret the language accepted by Turing machine.

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outco	omes
	PO	РО	PO	PO	РО	PO	РО	PO	РО	РО	PO	РО	РО	PO	РО	PSO-	PSO-
	1     2a     2b     2c     3a     3b     3c     4a     4b     4c     5a     5b     6     7a															1	2
CS1103.1					1		1	1		1						2	1
CS1103.2					1			1	1					1		2	1
CS1103.3					1	1	1	1	1					1		2	1
CS1103.4					1	1		1					1			1	1
CS1103.5					1	1		1					1	1		1	1
CS1103.6					1			1					1			1	1
CS1103.7					1			1		1			1			1	1
Average	0.00	0.00	0.00	0.00	1.00	0.43	0.29	1.00	0.29	0.29	0.00	0.00	0.57	0.43	0.00	1.43	1.00

Course Name: Computational Engineering Analysis - I

- ES1106.1. Solve ordinary differential equations through various techniques.
- ES1106.2. Determine the structural behavior of the body by determining the stresses, strains produced by the application of load.
- ES1106.3. Analyze the concept of buckling and be able to solve the problems related to column and struts.
- ES1106.4. Model the problems of column and struts mathematically in terms of ordinary differential equations and solve them using the appropriate method.
- ES1106.5. Simulate the solutions of the above-mentioned models of columns and struts.
- ES1106.6. Analyze a function of complex variables in terms of analyticity, poles and zeroes.
- ES1106.7. Find Laplace and inverse Laplace transforms of given function and use Laplace transform to solve ordinary differential equations.
- ES1106.8. Design and Evaluate the LC, RC & RL Networks using Foster's and Cauer Forms
- ES1106.9. Analyze stability criteria for electrical network using pole zero plot and routhhurwitz polynomials
- ES1106.10. Model and simulate electrical networks using Proteus simulator/ Virtual lab.

Course						Correl	ation w	ith prog	ram ou	tcomes						Corre	lation
Outcome						Conten		iui prog	,iuni ou	ceomes						with p	rooram
Outcome																with p	aifia
																spea	
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	outc	omes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1106.1					2	2	2	1	1		1	1					
ES1106.2					2			2									
ES1106.3					1			1							1		
ES1106.4		1			1	2	2	1	1	1	2	1					
ES1106.5							2	1		1							
ES1106.6					2												
ES1106.7					2	2	1	1	1		1	2					
ES1106.8					2	2		2			1	1		1			
ES1106.9					2	2		1			1	1					
ES1106.10	1						1		1								
Average	0.10	0.10	0.00	0.00	1.40	1.00	0.80	1.00	0.40	0.20	0.60	0.60	0.00	0.10	0.10	0.00	0.00

#### Course Name: Engineering Measurements and Machines

- ES1107.1. Evaluate suitable electrical and non-electrical instruments for measuring physical quantities.
- ES1107.2. Analyze the construction, characteristics and applications of various types of rotating machines.
- ES1107.3. Analyze the working of any mechanical and electrical machine using mathematical model.
- ES1107.4. Integrate the sensors for monitoring and automation of electrical and mechanical systems.
- ES1107.5. Design electro-mechanical machines as per Indian standards.

Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spec	cific
																outco	omes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1107.1	2				2	1	1				1	1	1	1			
ES1107.2		1			1	1	1	1									
ES1107.3					1	2	1	1	1		1						
ES1107.4	1	1	1		1	1	1	1	1		1		1				
ES1107.5	1		1	1	1	1	1	1	1		1	1					
Average	0.80	0.40	0.40	0.20	1.20	1.20	1.00	0.80	0.60	0.00	0.80	0.40	0.40	0.20	0.00	0.00	0.00

# Course Name: Perspectives on Contemporary Issues

- CC1103.1. Identify different perspectives objectively.
- CC1103.2. Explain interconnectedness of the issues and their impact at micro and macro levels.
- CC1103.3. Recognize their own beliefs, biases, claims and assumptions.
- CC1103.4. Evaluate sources, argue and defend effectively.

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outco	omes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1103.1	1		1					1			1	1					
CC1103.2						1					1	1	1				
CC1103.3											1	1	1				
CC1103.4	1		1									1	1				
Average	0.50	0.00	0.50	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.75	1.00	0.75	0.00	0.00	0.00	0.00

## Course Code: IL1101

#### **Course Name: Management Perspectives**

- IL1101.1. Comprehend the importance of management and its functional areas in businesses and also its interaction with technology.
- IL1101.2. Highlight specific external and internal issues impacting businesses.
- IL1101.3. Integrate and analyze multiple dimensions of management aspects to solve business problems.
- IL1101.4. Evaluate the aspects that management might consider when evaluating technical and engineering projects such as planning and scheduling, personnel management, cost control etc. from a management perspective

Course						Correla	ation w	ith prog	gram ou	itcomes	5					Corre	elation
Outcome																with p	rogram
																spe	cific
																outc	omes
	PO	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
IL1101.1	1				1												
IL1101.2	1	1											1				
IL1101.3	2		1		1						1		1				
IL1101.4	1			1							2	1					
Average	1.25	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.25	0.50	0.00	0.00	0.00	0.00

#### Course Name: Data Visualization

- CS1310.1. Present the data in a form that makes sense to people.
- CS1310.2. Apply various techniques for presenting data visually with R
- CS1310.3. Make use of data visualization libraries in Python, viz. Matplotlib, Seaborn, and Folium.
- CS1310.4. Create own data science projects using Tableau.

Course						Correla	ation wi	ith prog	ram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1310.1					1	1	1							1			
CS1310.2					1	1	1										
CS1310.3					1	1	1										
CS1310.4					1	1	1	1						1	1	1	1
Average	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.25	0.00	0.00	0.00	0.00	0.00	0.50	0.25	0.25	0.25

#### Course Name: Design and Analysis of Algorithms

- CS1105.1. Analyze the complexity of different algorithms using asymptotic analysis.
- CS1105.2. Analyze and select an appropriate data structure for a computing problem.
- CS1105.3. Differentiate between different algorithm designs technique: Divide and Conquer Technique, Greedy, Backtracking, and Dynamic Programming. Also, recognize when an algorithmic design situation calls for using these.
- CS1105.4. Develop algorithm and programs using Divide and Conquer technique to solve various computing problems, e.g., Sorting, Strassen's matrix multiplication, and Closest pair.
- CS1105.5. Develop energy-efficient algorithms and programs using Greedy approach to solve various computing problems, e.g., Minimum Spanning Trees, Shortest Path, Knapsack, Job scheduling, Graph coloring etc.
- CS1105.6. Develop algorithms and programs using Backtracking technique to solve various computing problems, e.g., N queen, Hamiltonian Cycle detection, Travelling salesman, and Network flow.
- CS1105.7. Develop algorithms and programs using Dynamic Programming technique to solve various computing problems, e.g., Knapsack, Shortest path, Coinage, Matrix Chain Multiplication, Longest common subsequence.
- CS1105.8. Apply Query optimization algorithms using Greedy and Dynamic programming approaches.
- CS1105.9. Apply various search-based problem-solving methods e.g., Uninformed search (BFS, DFS, DFS with iterative deepening), Heuristics, and Informed search (hillclimbing, generic best-first, A*).
- CS1105.10. Evaluate and apply appropriate energy efficient algorithmic design technique for solving complex computing problem.
- CS1105.11. Explain the ways to analyze randomized algorithms (expected running time, probability of error).
- CS1105.12. Differentiate between P, NP, NP-Complete, and NP-Hard problems.

# PAM 61

Course Outcome						Correla	ation w	ith prog	gram ou	tcomes						Corre with pr spec	lation rogram cific omes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1105.1	2		1		2											2	2
CS1105.2	2		1		2				1							2	2
CS1105.3	2		1		2				1							2	2
CS1105.4	2		1		1				1							2	2
CS1105.5	1		1		1				1							2	2
CS1105.6	1															2	2
CS1105.7	1		1		1				2							2	2
CS1105.8	1							1						1			2
CS1105.9	1				1			1	1					1	1	2	2
CS1105.10								1						1		2	2
CS1105.11	1		1		1			1						1			1
CS1105.12	1		1		1			1						1			1
Average	1.25	0.00	0.67	0.00	1.00	0.00	0.00	0.42	0.58	0.00	0.00	0.00	0.00	0.42	0.08	1.50	1.83

Course Name: Database Systems

- CS1106.1. Outline database system components and their functions
- CS1106.2. Model the real-world systems from the given requirements specification using Entity Relationship Diagrams/Unified Modelling Language
- CS1106.3. Convert the ER model into a relational logical schema using various mapping algorithms
- CS1106.4. Apply SQL commands to define, query and manipulate a relational database
- CS1106.5. Apply SQL coding standards to embed SQL in an application program
- CS1106.6. Write relational algebra expressions and optimize the same for given query
- CS1106.7. Convert relational algebra expressions into SQL commands and vice versa
- CS1106.8. Normalize a given database up to Boyce Codd Normal Form (BCNF) based on identified keys and functional dependencies
- CS1106.9. Determine the transaction atomicity, consistency, isolation, and durability for a given transaction-processing system.
- CS1106.10. Determine the deadlock in transaction-processing system. Apply the method of deadlock avoidance and deadlock detection and recovery
- CS1106.11. Apply various concurrency control protocol like two phase locking, timestamping and the method of log base recovery in case of failure

Course						Correl	ation w	ith prog	ram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
		-				-			-	-		-	-		-	outc	omes
	РО	РО	PO	PO	PO	РО	PO	PO	РО	РО	РО	РО	РО	PO	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1106.1	1				1	1	1				1	1	1			1	1
CS1106.2	1	1			1	2	2		1		1					1	2
CS1106.3	1	1			1	2	2		1		1					1	2
CS1106.4	1				1	1	1									1	
CS1106.5	1					1		1	1		1					2	1
CS1106.6	1	1			1			1	1				1			1	1
CS1106.7	1							1								1	1
CS1106.8	1	1			1	2	2	1	1		1					2	2
CS1106.9	1		1				1	1	1				1			1	1
CS1106.10	1		1				1	1	1				1			1	1
CS1106.11	1				1								1			1	1
Average	1.00	0.36	0.18	0.00	0.64	0.82	0.91	0.55	0.64	0.00	0.45	0.09	0.45	0.00	0.00	1.18	1.18

Course Name: Computer Architecture and Organization

- CS1107.1. Draw the functional block diagram of single bus architecture of a computer and describe the function of the instruction execution cycle, RTL interpretation of instructions, addressing modes, instruction set.
- CS1107.2. Summarize and compare different computer systems.
- CS1107.3. Categorize different types of computers based on Instruction set Architecture.
- CS1107.4. Develop assembly language programs for multiplication, division, and I/O interface using 8086.
- CS1107.5. Given a CPU organization and instruction, design a memory module and analyze its operation by interfacing with the CPU.
- CS1107.6. Write a flowchart for Concurrent access to memory and cache coherency in Parallel Processors and describe the process.
- CS1107.7. Given a CPU organization, assess its performance, and apply design techniques to enhance performance using pipelining, parallelism and RISC methodology.
- CS1107.8. Analyze the performance of pipeline and cache-based systems.
- CS1107.9. Design algorithms to optimize hit-rate in cache memory.
- CS1107.10. Program and estimate the execution time of arithmetic functions using different number systems.

Course						Correla	ation w	ith prog	ram ou	tcomes						Corre	lation
Outcome								1 0	·							with p	rogram
																spe	cific
																outc	omes
	РО	РО	РО	РО	РО	РО	РО	РО	PO	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1107.1		1		1				1				1				2	
CS1107.2	1		1			1								1			2
CS1107.3		1					1				1						
CS1107.4			1		1				1	1			1			2	2
CS1107.5	1							1				1		1		2	
CS1107.6		1		2			2				1					2	2
CS1107.7	1		1		1				1			1					2
CS1107.8	1	2				2				2				1		2	2
CS1107.9	1		1		1			1				1				2	
CS1107.10	1	2				2			2				1				2
Average	0.60	0.70	0.40	0.30	0.30	0.50	0.30	0.30	0.40	0.30	0.20	0.40	0.20	0.30	0.00	1.20	1.20

## Course Name: Computational Engineering Analysis - II

ES1109.1.	Classify various types of partial differential equations and solve them through
	various analytical and numerical methods.

- ES1109.2. Formulate and analyze differential equations especially Navier stokes and energy equations and use numerical methods for solving the same.
- ES1109.3. Use Numerical method for solving partial differential equations using finite difference method.
- ES1109.4. Find Fourier and inverse Fourier transforms of given function and use Fourier transform to solve partial differential equations.
- ES1109.5. Find Z-transform and inverse Z-transforms of given functions and use them to analyze control systems.
- ES1109.6. Design and analyse various types of filters and attenuators to minimize power losses and improve signal quality.
- ES1109.7. Solve problems involving vertex and edge connectivity, planarity and crossing numbers.

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Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spe	cific
																outo	omos
						1	1		1	1		1		1		oute	omes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1109.1	1				1	1		1			1						
ES1109.2	2		2		2	2	1	2			1		1	2			
ES1109.3						1	2										
ES1109.4					2	2		1			1						
ES1109.5	1		1		2	2		1			1			1			
ES1109.6		1				1	2			2				1			
ES1109.7						1	2	2						1			
Average	0.57	0.14	0.43	0.00	1.00	1.43	1.00	1.00	0.00	0.29	0.57	0.00	0.14	0.71	0.00	0.00	0.00

Course Name: Communication and Identity

Course Outcomes: After course completion, the student will be able to

CC1104.1. Analyse their personal identities, both private and social

CC1104.2. Identify their different values, strengths and areas of professional interest

CC1104.3. Articulate their personal statement and use it to craft an influential pitch

CC1104.4. Express themselves through various communication formats on different platforms

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	РО	PO	РО	РО	РО	РО	РО	PO	PO	РО	PO	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1104.1													1	1			
CC1104.2	1		2	1										2			
CC1104.3													1				
CC1104.4													2				
Average	0.25	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.00

## Course Code: IL1102

#### Course Name: Introduction to Design

- IL1102.1. Identify the user and build persona of the
- IL1102.2. Sketch their ideas on paper to visualize and assess viability.
- IL1102.3. Create a plan for process and management to materialize the desired idea.
- IL1102.4. Test the material for possibilities and capabilities.
- IL1102.5. Develop skills of joinery, material manipulation and various hand tools.
- IL1102.6. Develop technical and narrative skills useful for both film and animation.
- IL1102.7. Develop troubleshooting and problem-solving skills.

-																	
Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	elation
Outcome																with program	
																specific	
																spe	cinc
																outcomes	
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
IL1102.1	1								1	1			1	1			
IL1102.2	2						1						2				
IL1102.3	1						1	1						2			
IL1102.4	1						1	1									
IL1102.5							1	1									
IL1102.6	2						1						1				
IL1102.7	1		1			1	1										
Average	1.14	0.00	0.14	0.00	0.00	0.14	0.86	0.43	0.14	0.14	0.00	0.00	0.57	0.43	0.00	0.00	0.00

#### Course Name: Enterprise Programming using JAVA

- CS1303.1. Design, develop and debug software applications in Core Java taking into account coding and documentation standards.
- CS1303.2. Apply concepts like multithreading, interfaces, generics in Java program design and implementation.
- CS1303.3. Use JDBC API for database-independent connectivity between the Java programs and MySQL database.
- CS1303.4. Develop server-side solution using Servlet and JSP technologies.
- CS1303.5. Design, develop, and debug web applications using Aspect Oriented Programming using Spring Framework.

Course						Correl	ation w	ith prog	gram ou	tcomes						Correlation		
Outcome																with program		
																	specific	
																outcomes		
	РО	РО	РО	РО	PO	РО	РО	РО	PO	РО	PO	РО	РО	PO	PO	PSO-	PSO-	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
CS1303.1					1	1	1							1				
CS1303.2					1	1	1											
CS1303.3					1	1								1				
CS1303.4					2	2	2	1						1	1	1	1	
CS1303.5											1	1				1		
Average	0.00	0.00	0.00	0.00	1.00	1.00	0.80	0.20	0.00	0.00	0.20	0.20	0.00	0.60	0.20	0.40	0.20	

Course Name: Operating System

- CS1108.1. Use basic LINUX commands: file/directory handling, standard I/O, redirection, pipes, and filters.
- CS1108.2. Analyze the structure of OS and its interface with hardware.
- CS1108.3. Differentiate between different types of operating systems Multiprogramming systems, Time-sharing systems, Parallel systems, Real-Time systems, Distributed systems and Mobiles systems. Compare Windows, Android and LINUX OS with respect to their key features and functionality.
- CS1108.4. Differentiate between various states of process and their representation using process control block (PCB). Analyze data structures used by an OS to manage the processes.
- CS1108.5. Implement and Assess the performance of different types of scheduling algorithms.
- CS1108.6. Examine process synchronization and Inter process communication- Race condition, semaphores, monitors, inter process communication through message passing.
- CS1108.7. Categorize the conditions that cause deadlock in resource allocation. Implement deadlock handling strategies.
- CS1108.8. Analyze paging, segmentation, and segmentation with paging for VM support in memory management. Implement different page replacement algorithms.
- CS1108.9. Analyze and implement various disk-scheduling algorithms.

C	r					C 1										C	1
Course						Correla	ation w	ith prog	ram ou	tcomes						Corre	lation
Outcome																with program	
																specific	
																outcomes	
	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO														PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1108.1	1				1	1	1									1	1
CS1108.2	1				1	1										1	3
CS1108.3	1				1	1										1	
CS1108.4	1				1	1										1	
CS1108.5	1				1	1	1				1	1				3	3
CS1108.6	2				2	1		1	1		1	1	2			3	3
CS1108.7	2				2	1		1	1		1	1				3	3
CS1108.8	2				2	1	1	1	1		1	1	1		1	3	3
CS1108.9	2				2	1	1	3	3		1	1	2		3	3	3
Average	1.44	0.00	0.00	0.00	1.44	1.00	0.44	0.67	0.67	0.00	0.56	0.56	0.56	0.00	0.44	2.11	2.11

Course Name: Artificial Intelligence and Machine Learning

- CS1110.1. Explain the role of agents and how it is related to environment and the way of evaluating it and how agents can act by establishing goals.
- CS1110.2. Implement intelligent agents for making computers solve critical problems the way human beings do.
- CS1110.3. Analyze the usage of Game theory and role of heuristics for building Intelligent Agents.
- CS1110.4. Apply AI techniques in applications which involve perception, reasoning and learning.
- CS1110.5. Acquire the knowledge of real-world knowledge representation.
- CS1110.6. Identify machine learning techniques suitable for a given problem.
- CS1110.7. Interpret fundamental issues and challenges of machine learning: data, model selection, model complexity, etc.
- CS1110.8. Use the standards and energy efficient ML algorithms.
- CS1110.9. Appreciate the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.
- CS1110.10. Utilize state-of-the art algorithms of Machine Learning for building applications related to SDG goals

Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	elation
Outcome																with program	
																specific	
																outcomes	
	PO P															PSO-	PSO-
	1	10	21	10	10	21	10	10	10	10	10	51	10 C	7.	71	1 1	150-
	1	Za	20	2C	3a	30	3C	4a	40	40	Sa	50	6	/a	70	1	2
CS1110.1	1			1												1	1
CS1110.2			1			2		2				1				2	3
CS1110.3						1					1	2		1	1	1	1
CS1110.4	2	1		1			1		2		2	2		3		3	3
CS1110.5			1		3			1					2			3	
CS1110.6	2	1		1		3			2	1	2		1		3		3
CS1110.7			1		2		3					1		2	2		3
CS1110.8	2		1					3	3		3	1		3		3	2
CS1110.9		1		1		2		2	1		2	2	3		3	3	2
CS1110.10			2	1	1		2		2	2		2		2	2	3	2
Average	0.70	0.30	0.60	0.50	0.60	0.80	0.60	0.80	1.00	0.30	1.00	1.10	0.60	1.10	1.10	1.90	2.00

# Course Name: Understanding and Managing Conflict

- CC1105.1. Define a group and explain the stages of group development
- CC1105.2. Describe conflict and explain types and causes of conflict
- CC1105.3. Use inquiry and advocacy to engage with groups
- CC1105.4. Give and receive feedback effectively
- CC1105.5. Identify sources of conflict and manage them using difference conflict handling styles

Course						Correla	ation w	ith prog	gram ou	tcomes						Correlation	
Outcome																with program	
																	cific
																outcomes	
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1105.1	1										2		1				
CC1105.2	1							1									
CC1105.3	1		1						1		2	1	1				
CC1105.4	1										1		1				
CC1105.5	1										1	1	1				
Average	1.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1.20	0.40	0.80	0.00	0.00	0.00	0.00

Course Name: Introduction to IoT

- EE1111.1 Interface the Analog and Digital sensors to Node-MCU
- EE1111.2 Develop Embedded C programs to read sensor data and upload to public cloud platform.
- EE1111.3 Use Python-based IDE (integrated development environments) for the Raspberry Pi
- EE1111.4 Interface Raspberry Pi with I/O devices.
- EE1111.5 Visualize sensor data uploaded on public cloud.
- EE1111.6 Apply standard protocol(s) for implementation of IoT Systems.
- EE1111.7 Analyze and Improve existing systems with innovative IoT based approaches.

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation	
Outcome																with program		
																	specific	
																outcomes		
	PO	PO	PO	PO	PO	РО	РО	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
EE1111.1								1		1	1							
EE1111.2							1	1	1		1							
EE1111.3								1		1								
EE1111.4								1	1	1	1		1	1				
EE1111.5							1	1		1	1			1				
EE1111.6									1	1			1	1				
EE1111.7									1	1	1							
Average	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.71	0.57	0.86	0.71	0.00	0.29	0.43	0.00	0.00	0.00	
#### Course Code: CS1111

Course Name: Computer Networks and Distributed Systems

Course Outcomes: On successful completion of this course, the students should be able to

- CS1111.1 Categorize the various type of Networks on the basis of geographical distance, topology and implementation.
- CS1111.2 Compare the function and services provided by different layers of OSI and TCP/IP network architectures.
- CS1111.3 Do network programming using sockets in C.
- CS1111.4 Find out the errors in the transmitted segments through error detection techniques like Checksum, Cyclic Redundancy check etc.
- CS1111.5 Use various network monitoring commands like netstat, traceroute, ipconfig etc.
- CS1111.6 Analyze the underlying architectures and protocols of networking applications like File Transfers, Mail Transfers etc.
- CS1111.7 Apply the concepts of IP addressing, subnet masking and routing algorithms.
- CS1111.8 Apply and compare the sliding window Transmission Control Protocols like Go-Back N, Stop-N-Wait and Selective Repeat using the criteria of segment loss, acknowledgement loss etc.
- CS1111.9 Analyze distributed systems and understand classification of agreement protocol.
- CS1111.10 Apply the concept of logical clocks and global clocks in distributed systems.

Course						Correla	ation w	ith prog	gram ou	tcomes						Correlatio	
Outcome																with p	rogram
																spee	cific
					-	-	-					-			-	outc	omes
	PO	PO	РО	PO	РО	РО	РО	PO	PO	PO	PO	PO	PO	PO	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1111.1	1			1	1	2		1	1	2	1		1	2		2	2
CS1111.2				1									2	1			
CS1111.3				1	2			1			3	2	1	1	3	2	3
CS1111.4						1			1	1							2
CS1111.5					1		2						1		2	2	3
CS1111.6						1	2				1	2	1			2	3
CS1111.7	1						1		2			2	1		1	3	2
CS1111.8							1	2		1		2		1		2	2
CS1111.9	1					1	2			2		1			1	2	2
CS1111.10	1			1	1					2		1			1	2	1
Average	0.40	0.00	0.00	0.40	0.50	0.50	0.80	0.40	0.40	0.80	0.50	1.00	0.70	0.50	0.80	1.70	2.00

### Course Code: CS1112

### Course Name: Compiler Design

Course Outcomes: On successful completion of this course, the students should be able to:

- CS1112.1 Specify and analyze the lexical, syntactic and semantic structures of programming language features
- CS1112.2 Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
- CS1112.3 Write scanners, parsers, and semantic analyzers without the aid of automatic generators
- CS1112.4 Utilize the compiler design concept to write efficient programs
- CS1112.5 Design the structures and support required for compiling advanced language features.

-																	
Course						Correl	ation w	ith prog	gram ou	tcomes						Correlation	
Outcome																with progra	
																spee	cific
																outcomes	
	РО	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	РО	РО	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1112.1	1				2	1	2									2	2
CS1112.2	1				1		1									2	2
CS1112.3	1				1		1						1			2	2
CS1112.4	1				2	1	2				1		1			3	3
CS1112.5	1				2	1	2	1	1		1	1	1			3	3
Average	1.00	0.00	0.00	0.00	1.60	0.60	1.60	0.20	0.20	0.00	0.40	0.20	0.60	0.00	0.00	2.40	2.40

### Course Code: CS1113

#### Course Name: Software Engineering

Course Outcomes: On successful completion of this course, the students will be able to:

- CS1113.1. Use software development lifecycle models for project development.
- CS1113.2. Explain the advantages of agile software development over traditional software engineering methods.
- CS1113.3. Apply agile development method namely Extreme Programming (XP), Adaptive software development (ASD), Scrum and Crystal for software development.
- CS1113.4. Design solutions in various application domains using software engineering approaches that integrate ethical and economic concerns.
- CS1113.5. Elicit and Evaluate functional and non-functional requirements for a software system.
- CS1113.6. Design, represent and document software requirements specification according to IEEE standards.
- CS1113.7. Apply UML modelling for software design.
- CS1113.8. Apply coding standards and guidelines.
- CS1113.9. Prepare code checklist and perform code inspections, code reviews and walkthrough.
- CS1113.10. Develop and implement various manual and automated testing procedures.
- CS1113.11. Estimate the cost of software project.
- CS1113.12. Evaluate software in terms of software quality and quality assurance according to ISO standards.
- CS1113.13. Execute activities for software project such as re-engineering, reverse engineering and software configuration.

# PAM 75

Course						Correla	ation w	ith prog	gram ou	tcomes						Correlation	
Outcome																with p	rogram
																spe	cific
																oute	omes
	DO	DO	DO	DO	DO	DO	DO	DO	DO	DO	DO	DO	D.O.	DO	DO	Dao	Dao
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1113.1	2				1	1										1	1
CS1113.2	1				1	1										1	1
CS1113.3	1				1	1										1	2
CS1113.4	1				1	1										1	1
CS1113.5	1				1	1										2	1
CS1113.6	1	1	1	1	1	1	2									2	2
CS1113.7	1				1	1					1	2	2			2	2
CS1113.8	1	1	1	1	1	1					1	2		1		2	2
CS1113.9	1				1	1					1	2	2	1		2	2
CS1113.10	1	1	1	1	1	1			2		1	2		1		2	2
CS1113.11	1	1	1	1	1	1			2					1		2	2
CS1113.12	1	1	1	1	1	1	2		2		2	2		2	2	3	3
CS1113.13	1	1	1	1	1	1	2		2		2	2		2	2	3	3
Average	1.08	0.46	0.46	0.46	1.00	1.00	0.46	0.00	0.62	0.00	0.62	0.92	0.31	0.62	0.31	1.85	1.85

#### Course Code: CC1106

Course Name: Critical Thinking for Decisions at Workplace

Course Outcomes: After course completion, the student will be able to

- CC1106.1 Apply techniques of Critical Thinking to analyse organizational problems through positive inquiry
- CC1106.2 Describe and analyse appropriate problem-solving and ethical decision-making processes
- CC1106.3 Choose the most effective and logical decision among multiple alternatives
- CC1106.4 Evaluate solutions and anticipate likely risks based on purpose, context and ethics

Course						Correla	ation w	ith prog	gram ou	tcomes						Correlation	
Outcome																with program	
																spee	cific
																outcomes	
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1106.1	1										2		2				
CC1106.2	2					1		2					1				
CC1106.3									1		1	2	1				
CC1106.4							1	2				2					
Average	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00

#### Course Code: PR1101

Course Name: Automation Project

Course Outcomes: On successful completion of this course, the students should be able to:

- PR1101.1 Design and implement a complete project in IoT/Automation using microcontroller/SOC interfaced with sensors or any other automation hardware/tools.
- PR1101.2 Apply anyone/more standard data communication/IoT protocol(s).
- PR1101.3 Use cloud servers for data streaming/logging and analytic techniques.
- PR1101.4 Implement algorithms/signal processing using the data at edge/cloud.
- PR1101.5 Deploy techniques to conserve bandwidth/energy/other resources and achieve cost economy for project.

Course						Correla	ation w	ith prog	ram ou	tcomes						Correlatio	
Outcome																with program	
																spee	cific
																outc	omes
	PO	PO	PO	PO	РО	РО	РО	РО	РО	РО	РО	РО	РО	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
PR1101.1	2				2					2		2		3			
PR1101.2						2											
PR1101.3							2										
PR1101.4	2								2								
PR1101.5					2		2										
Average	0.80	0.00	0.00	0.00	0.80	0.40	0.80	0.00	0.40	0.40	0.00	0.40	0.00	0.60	0.00	0.00	0.00

Course Code	PO1	PO2a	PO2b	PO2c	PO3a	PO3b	PO3c	PO4a	PO4b	PO4c	PO5a	PO5b	PO6	PO7a	PO7b	PSO1	PSO2
564404																	
ES1101	0.00	0.33	0.56	0.00	1.00	0.78	0.00	0.67	0.00	0.33	0.89	0.00	0.56	0.56	0.00	0.00	0.00
ES1102	1.17	0.17	0.17	0.17	1.17	0.67	0.67	0.17	0.00	0.00	0.33	0.33	0.33	0.67	0.00	0.00	0.00
AS1101	1.00	0.00	0.25	0.00	0.38	0.13	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.13	0.13	0.00	0.00
CC1101	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.60	0.00	0.40	0.00	0.00	0.00	0.00
ES1103	0.50	0.00	0.00	0.00	0.38	1.75	1.38	0.00	0.25	0.00	0.88	0.00	0.75	0.00	0.00	0.00	0.00
ES1104	0.50	0.00	0.00	0.00	0.92	0.33	0.25	0.33	0.25	0.00	0.00	0.50	0.17	0.67	0.00	0.00	0.00
CS1101	0.00	0.00	0.00	0.00	0.40	0.40	0.20	0.00	0.00	0.00	0.40	0.40	0.00	0.40	0.00	0.00	0.00
ES1105	0.67	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
CC1102	0.00	0.00	0.40	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.60	0.00	0.00	0.00	0.00
AS1102	0.50	0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
CS1102	0.83	0.17	0.33	0.33	1.00	0.50	0.33	0.00	0.00	0.17	0.17	0.50	0.33	0.00	0.00	1.33	2.00
ES1106	0.10	0.10	0.00	0.00	1.40	1.00	0.80	1.00	0.40	0.20	0.60	0.60	0.00	0.10	0.10	0.00	0.00
ES1107	0.80	0.40	0.40	0.20	1.20	1.20	1.00	0.80	0.60	0.00	0.80	0.40	0.40	0.20	0.00	0.00	0.00
EE1101	0.40	0.00	0.40	0.00	0.80	0.60	0.20	0.60	1.00	0.60	0.00	0.00	0.00	0.40	0.00	1.40	1.00
CC1103	0.50	0.00	0.50	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.75	1.00	0.75	0.00	0.00	0.00	0.00
IL1101	1.25	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.25	0.50	0.00	0.00	0.00	0.00
EE1107	1.00	0.80	0.80	0.40	0.80	1.00	0.80	0.80	0.20	0.20	0.20	0.40	0.60	0.20	0.40	1.20	0.80
EE1110	1.00	0.00	0.00	0.00	0.60	0.40	0.00	0.20	0.40	0.40	0.00	0.00	0.00	0.80	0.00	1.60	1.40
ES1109	0.57	0.14	0.43	0.00	1.00	1.43	1.00	1.00	0.00	0.29	0.57	0.00	0.14	0.71	0.00	0.00	0.00
EE1103	0.80	0.40	0.20	0.20	0.80	1.00	0.40	0.60	0.40	0.20	0.20	0.40	0.40	0.20	0.00	1.00	0.60
EE1104	0.13	0.00	0.38	0.13	0.63	0.25	0.13	0.38	0.75	0.50	0.00	0.25	0.25	0.38	0.00	1.88	1.13
EE1105	0.91	0.09	0.09	0.18	0.82	0.27	0.73	0.09	0.09	0.09	0.09	0.00	0.18	0.18	0.09	0.91	0.55
CC1104	0.25	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.00
IL1102	1.14	0.00	0.14	0.00	0.00	0.14	0.86	0.43	0.14	0.14	0.00	0.00	0.57	0.43	0.00	0.00	0.00
EE1109	0.50	0.33	0.33	0.17	0.50	0.33	0.83	1.00	1.00	0.33	0.67	0.33	1.00	0.50	0.00	1.33	2.00

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## **Program Articulation Matrix (B. Tech EEE)**

EE1102	1.14	0.00	0.00	0.00	0.43	0.00	0.00	1.14	0.00	0.29	0.00	0.00	0.00	0.29	0.00	1.14	0.57
CC1105	1.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1.20	0.40	0.80	0.00	0.00	0.00	0.00
EE1111	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.71	0.57	0.86	0.71	0.00	0.29	0.43	0.00	0.00	0.00
PR1101	0.80	0.00	0.00	0.00	0.80	0.40	0.80	0.00	0.40	0.40	0.00	0.40	0.00	0.60	0.00	0.00	0.00
EE1112	0.40	0.00	0.40	0.00	0.60	0.20	0.80	0.00	0.80	0.40	0.80	0.60	0.40	0.80	1.00	1.80	2.20
EE1208	0.25	0.00	0.75	0.63	0.88	0.13	1.00	0.75	1.63	0.75	0.00	0.00	0.13	0.38	0.00	1.88	1.88
EE1114	0.60	0.60	0.20	0.20	1.40	1.00	1.00	1.20	0.60	0.40	0.20	0.20	0.80	0.40	0.40	1.20	1.00
EE1115	0.14	0.00	0.29	0.29	0.86	0.43	0.57	1.14	1.00	1.00	0.00	0.43	0.29	0.43	0.00	2.00	1.29
CC1106	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00
DE (1)																1.20	1.00
DE (2)																1.30	1.20
DE (3)																1.40	1.20
DE (4)																1.40	1.40
DE (5)																1.60	1.40
Total*	20.00	4.37	7.96	3.38	20.07	15.62	14.52	14.66	11.13	7.55	12.59	8.40	13.38	10.58	2.12	25.57	22.60
Program Articulation	С	Ν	Ν	Ν	С	AB	AB	AB	AB	Ν	AB	AB	AB	AB	Ν	С	С
Expectation	С	Ν	N/AB	Ν	С	AB	AB	AB	N/AB	N	AB	AB	AB	AB	N	С	С

## Description of levels of Program Articulation:

Novice (N) (Low)	<ul> <li>Knows objective facts, features, and rules for determining actions with respect to this PO/PSO without being context sensitive.</li> <li>Has studied the basic concepts.</li> </ul>
Advanced beginner (AB) (Moderate)	<ul> <li>Recognizes common situations with respect to this PO/PSO that help in recalling which rules should be exercised, starts to recognize and handle situations not covered by given facts, features and rules.</li> <li>Has problem solving and repeated practice experience for common situations with respect to this PO/PSO.</li> </ul>
Competent (C) (High)	<ul> <li>Performs most standard actions with respect to this PO/PSO without conscious application of rules after considering the whole situation.</li> <li>Handles new situations through the appropriate application of rules, can design systems.</li> <li>May lead.</li> <li>Has demonstrated this PO/PSO through repeated engagements in advanced problem solving, projects, extensive practice in common and exception situations, and participated in professional networks.</li> </ul>

#### Calculation Criteria for the Program Articulation Levels:

Novice (N) (Low)	Total* < 8
Advanced beginner (AB) (Moderate)	8 ≤ Total* < 16
Competent (C) (High)	$Total^* \ge 16$

	JK Lakshmipat University, Jaipur Institute of Engineering and Technology											
			Instit	ute of Engineering	and Technology	ina						
			Course	Structure for the B	. Tech (Batch 2019	- 2023)						
Semester				Courses				(L T P S) Credits	Hrs/ Week			
I	Computational Data Analysis	Design and Prototyping	Experiment al Science-I	Fundamentals of Communication								
	ES1101	ES1102	AS1101	CC1101								
	(10s 2 0) 10	(6s 0 0) 6	(104)3	2				21	25			
II	Calculus and Applied Mechanics	s of Automation Engineering	Object Oriented Programming	Energy and Environmental Studies	Critical Thinking and Storytelling	Scientific Perspectiv es						
	ES1103	ES1104	CS1101	ES1105	CC1102	AS1102						
	(6s 2 0) 6	(6s 2 0) 6	2		20	24						
	Data Structures											
III	CS1102											
	(3 0 2) 4	(3 1 2) 5	(3 0 4) 5	(3 0 2) 4	2	2 (Management week)		22	25			
IV	Power Systems- I/ Digital Systems Design	Computationa l Engineering Analysis-II	Advanced Electrical Machines/ Electromagnet ics and	Signals and Control Systems	Communicatio n and Identity	Introduction to Design						
	EE1107/EE111 0	ES1109	EE1103/EE11 04	EE1105	CC1104	IL1102						
	(3 0 2) 4	(3 1 2) 5	(3 0 2) 4	(3 0 4) 5	(210)2	2 (Design week)		22	25			
	Practice School -	· I (PS 1101) – (	4 to 6 Weeks D	uration)		Weekj		4				
V	Analog and Digital Communications	Analog Circuits	0 E- I	DE-I	Understanding and Managing Conflict	Introduction to IoT						
·	EE1109	EE1102			CC1105	EE1111						
	(3 0 2) 4	(6 0 0) 4	4	4	(200)2	(1 0 2) 2		20	22			
VI	Industrial Electronics/ Digital Communication Networks	Power Systems- II/ Digital Signal Processin g	DE-II	DE-III/OE-II	Critical Thinking for Decisions at Workplace	Emerging Tech Week	Automation Project					
	EE1112/EE120 8	8 EE1114/EE11 15			CC1106		PR1101					
	(3 0 2) 4	(3 0 2) 4	4	4	2	2	(0 0 1) 2	22	17/23			
VII	DE-IV	DE-V	DE-VI	OE-II	Minor Project PR1103							
17111	4	4 11 /Entro	4	4	4	north cr		20	20			
VIII	University	• 11 / Entreprene		tesearch Project	/ Semester at a	partner		16				
			Total Credi	ts				167				

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Code	: CC1101	9
Code	: ES1103	10
Code	: ES1104	11
Code	: CS1101	12
Code	: ES1105	13
Code	: CC1102	14
Code	: AS1102	15
Code	: CS1102	16
Code	: ES1106	
Code	: ES1107	
Code	: EE1101	19
Code	: CC1103	20
Code	: IL1101	21
Code	: EE1107	22
Code	: EE1110	23
Code	: ES1109	24
Code	: EE1103	25
Code	: EE1104	
Code	: EE1105	27
Code	: CC1104	
Code	: IL1102	29
Code	: EE1109	
Code	: EE1102	
Code	: CC1105	
Code	: EE1111	
Code	: PR1101	
Code	: EE1112	35
Code	: EE1208	
Code	: EE1114	
Code	: EE1115	
Code	: CC1106	

<b>Course Cod</b>	e : ES1101
Course Nan	ne : Computational Data Analysis
<b>Course Out</b>	comes :
On successfu	al completion of this course, the students will be able to:
ES1101.1.	Write Simple Python programs using various datatypes, control structures, decision
	statements, libraries, functions (M1)
ES1101.2.	Develop Python programs using Objects, Classes and Files (M1, M2)
ES1101.3.	Develop Programs for analyzing and interpreting Complex situations in various
	domains including sustainable development by combining various Linear Algebra,
	Statistics and Other Problem-Solving Techniques (M3)
ES1101.4.	Model Complex systems as Linear simultaneous equations and analyze the same
	using Matrix methods (M1)
ES1101.5.	Model Data as matrices and Find Eigen Values and Eigen Vectors and Apply the
	same for problem solving, e.g., ranking and performance analysis (M1)
ES1101.6.	Summarize and Visualize different datasets (M2)
ES1101.7.	Analyze and interpret different datasets using Discrete and Continuous Probability
	Distributions and Apply the same for problem solving, e.g., Goodness of Fit (M2)
ES1101.8.	Formulate and validate hypothesis with reference to different datasets (M2)
ES1101 0	Apply correlation regression least square method and time series analysis for

ES1101.9. Apply correlation, regression, least square method and time series analysis for modeling, analysis, interpretation and forecasting (M2)

Course						Correla	ation wi	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	РО	PO	PO	PO	РО	РО	РО	PO	PO	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1101.1																	
ES1101.2											1						
ES1101.3					1	1					1			1			
ES1101.4			1		1	1				1	1						
ES1101.5			1		1	1				1	1			1			
ES1101.6					1	1		1			1		2				
ES1101.7		1	1		1	1		1			1		1	1			
ES1101.8		1	1		2	1		2			1		1	1			
ES1101.9		1	1		2	1		2		1	1		1	1			
Average	0.00	0.33	0.56	0.00	1.00	0.78	0.00	0.67	0.00	0.33	0.89	0.00	0.56	0.56	0.00	0.00	0.00

Course Code: ES1102Course Name: Design and Prototyping

#### Course Outcomes :

ES1102.1. Approach design challenges from the perspective of the user and offer innovative solutions effectively.

ES1102.2. Communicate and work in team towards a common goal.

ES1102.3. Think creatively towards a fun based, desirable solution.

ES1102.4. Develop the projection views of the products with dimensions and scales.

ES1102.5. Create the schematic diagram and isometric view of the parts using AutoCAD.

ES1102.6. Fabricate prototype by combining the different parts.

Course						Correla	ation wi	ith prog	gram ou	tcomes	5					Correl	ation with
Outcome																pro	ogram
																sp	ecific
					-		-	-	-	-	-	-	-	-	-	out	comes
	PO	PO	PO	PO	РО	PO	РО	РО	РО	РО	PO	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ES1102.1	2	1	1	1										2			
ES1102.2											1	1	1				
ES1102.3	2				2	1	1	1						2			
ES1102.4					1	1	1										
ES1102.5	1				2	1	1										
ES1102.6	2				2	1	1				1	1	1				
Average	1.17	0.17	0.17	0.17	1.17	0.67	0.67	0.17	0.00	0.00	0.33	0.33	0.33	0.67	0.00	0.00	0.00

Course Code	. 4 51101
Course Code	: A51101
Course Name	: Experimental Science
<b>Course Outcomes</b>	:
AS1101.1. Analyze and hard	erromagnetic properties of any magnetic material and differentiate Soft materials.
AS1101.2. Analyze	hermoelectric effect of metal junctions due to temperature differences.
AS1101.3. Analyze	nuclear radiation with respect to distance and thickness of absorbing media.
AS1101.4. Measure electrical	electrical properties e.g. specific resistance, time constant of various components.
AS1101.5. Use Schr of the qu	oedinger equation and quantum mechanical approach to analyze behavior antum particle under different potentials.
AS1101.6. Different samples.	iate hard and soft water by determining it's hardness of different water
AS1101.7. Analyze and cond	conductivity of samples by different techniques such as volumetric titrations luctometric.

AS1101.8. Determine properties of the lubricant/oil samples by Pensky-Martens and Red Viscometer.

Course						Correla	ation w	ith prog	gram ou	tcomes						Correlation with	
Outcome																pro	ogram
																sp	ecific
																out	comes
	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO <td>PSO-</td> <td>PSO-2</td>															PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
AS1101.1	1				1									1			
AS1101.2	1																
AS1101.3	1										1						
AS1101.4	1				1						1						
AS1101.5	1																
AS1101.6	1		1		1	1	1				1		1		1		
AS1101.7	1		1				1				1		1				
AS1101.8	1																
Average	1.00	0.00	0.25	0.00	0.38	0.13	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.13	0.13	0.00	0.00

Course Code	: CC1101
Course Name	: Fundamentals of Communication
<b>Course Outcomes</b>	:

- CC1101.1. Identify different cultural differences and their impact on communication.
- CC1101.2. Compose grammatically correct sentences and paragraphs.
- CC1101.3. Deliver effective oral presentations following appropriate kinesics and paralinguistic features.
- CC1101.4. Identify impact of cultural differences on communication.
- CC1101.5. Apply appropriate communication skills across settings, purposes, and audiences.

Course						Correla	ation w	ith prog	gram ou	tcomes						Corr	elation
Outcome																with p	orogram
																	ecific
																	comes
	РО	PO	РО	PO	РО	РО	РО	РО	PO	РО	РО	РО	РО	РО	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
CC1101.1									1		1		1				
CC1101.2																	
CC1101.3	1										1						
CC1101.4																	
CC1101.5	1										1		1				
Average	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.60	0.00	0.40	0.00	0.00	0.00	0.00

Course Code	: ES1103
Course Name	: Calculus and Applied Mechanics
<b>Course Outcomes</b>	:

- ES1103.1: Apply analytical techniques to determine forces in structures.
- ES1103.2: Use commercial software (STAAD Pro.) to simulate a structure/frame and determine force in the members.
- ES1103.3: Model physical phenomena using calculus and solve using appropriate method
- ES1103.4: Apply Newton's laws of motion and understand the concepts of dynamics concepts (force, momentum, work and energy)
- ES1103.5: Interpret the geometrical significance of differential and integral calculus
- ES1103.6: Solve problems of vector differentiation and integration
- ES1103.7: Calculate the buoyant forces of objects with various shape and carryout the stability analysis
- ES1103.8: Apply the concept of partial differentiation to solve optimization problems

Course						Correla	ation w	ith prog	gram ou	tcomes						Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	PO         PO<															PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ES1103.1						2					1		2				
ES1103.2						2	2				1						
ES1103.3	1				1	2	2		1		2		1				
ES1103.4	2				1	2	2				1						
ES1103.5	1				1	2	2										
ES1103.6						1	1										
ES1103.7						1	1		1		1		2				
ES1103.8						2	1				1		1				
Average	0.50	0.00	0.00	0.00	0.38	1.75	1.38	0.00	0.25	0.00	0.88	0.00	0.75	0.00	0.00	0.00	0.00

<b>Course Code</b>	: ES1104
<b>Course Name</b>	: Fundamentals of Automation Engineering
<b>Course Outcom</b>	mes :
On successful of	completion of this course, the students will be able to
ES1104.1.	Analyze electrical circuits using network theorems,
ES1104.2.	Measure electrical parameters of passive as well as active electrical components,
ES1104.3.	Design rectifier circuit using semiconductor devices,
ES1104.4.	Design filters for power conditioning,
ES1104.5.	Design and test a linear power supply for given specifications
ES1104.6.	Design and build Printed Circuit Boards,
ES1104.7.	Use electrical safety practices while working on electrical projects,
ES1104.8.	Formulate mathematical models for basic electro-mechanical systems,
ES1104.9.	Design and simulate a basic analog open-loop control system,
ES1104.10.	Evaluate and simplify Boolean functions and design the minimized logic using
	logic gates.
ES1104.11.	Design basic combinational and sequential circuits with minimum complexity,
ES1104.12.	Implement combinational circuit using simulation tools.

Course						Correla	ation wi	ith prog	ram ou	tcomes						Correl	ation with
Outcome																pro	ogram
																sp	ecific
		1												-		out	comes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ES1104.1					2			1									
ES1104.2						2								1			
ES1104.3					1			1									
ES1104.4					2							1		1			
ES1104.5					1							1		1			
ES1104.6							1		1			1		1			
ES1104.7	2						2						1				
ES1104.8	2				2			2						2			
ES1104.9					1							1		1			
ES1104.10																	
ES1104.11	2				2							1					
ES1104.12						2			2			1	1	1			
Average	0.50	0.00	0.00	0.00	0.92	0.33	0.25	0.33	0.25	0.00	0.00	0.50	0.17	0.67	0.00	0.00	0.00

Course Code	: CS1101
Course Name	: Object Oriented Programming
<b>Course Outcomes</b>	: On successful completion of this course, the students will be able to
CS1101.1. Develop	Java Programs with the concepts of primitive data types, strings and arrays.
CS1101.2. Develop	Java Programs using Object Oriented Programming Principles such as
Classes,	Objects, Data Abstraction, Data Encapsulation, Overloading, Overriding,
Polymor	phism, Inheritance, and Interfaces.

- CS1101.3. Design, develop and debug programs in Core Java using coding and documentation standards.
- CS1101.4. Incorporate exception handling in Java Programs.
- CS1101.5. Use JDBC API connectivity in between Java Programs and database.

Course						Correla	ation w	ith prog	gram ou	itcomes						Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	PO	PO	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PO	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
CS1101.1					1	1	1							1			
CS1101.2																	
CS1101.3					1	1					1	1		1			
CS1101.4																	
CS1101.5											1	1					
Average	0.00	0.00	0.00	0.00	0.40	0.40	0.20	0.00	0.00	0.00	0.40	0.40	0.00	0.40	0.00	0.00	0.00

Course Code: ES1105Course Name: Energy and Environmental StudiesCourse Outcomes: On successful completion of this course, the students will be able to<br/>ES1105.1: Relate renewable energy with ecology & environment<br/>ES1105.2: Explain the climate change and threat to biodiversity

ES1105.3: Describe the various pollution sources and their impacts on Environment

																-		
Course						Correla	ation w	ith prog	gram ou	tcomes						Correlation with		
Outcome																pro	ogram	
																sp	ecific	
																out	comes	
	РО	PO	PO	PO	PO	PO	РО	PO	РО	РО	PO	РО	PO	PO	PO	PSO-	PSO-2	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1		
ES1105.1	1					1												
ES1105.2		1									1							
ES1105.3	1				1													
Average	0.67	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	
																	ĺ	

Course Code	: CC1102
Course Name	: Critical Thinking and Storytelling
<b>Course Outcomes</b>	: On successful completion of this course, the students will be able to

- CC1102.1. Formulate intelligent questions to investigate
- CC1102.2. Evaluate information and argument for correctness, consistency, relevance and validity.
- CC1102.3. Compose well-structured and well-reasoned arguments.
- CC1102.4. Articulate and evaluate the impact of narratives.
- CC1102.5. Distinguish between facts, assumptions and opinion.

Course	Correlation with program outcomes													Correlation with			
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
CC1102.1			1					1									
CC1102.2			1			1							1				
CC1102.3											1						
CC1102.4													1				
CC1102.5													1				
Average	0.00	0.00	0.40	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.60	0.00	0.00	0.00	0.00

Course Code	: AS1102
Course Name	: Scientific Perspective
<b>Course Outcomes</b>	: On successful completion of this course, the students will be able to
AS1102.1. Distin	guish between science, pseudo-science, and other forms of knowledge.
AS1102.2. Distin	guish between science, engineering, technology, and mathematics and also
identi	fy the opportunities for integrating these disciplines.

AS1102.3. Use the scientific approach to identify and understand the societal problems.

AS1102.4. Explain, Design and carry out Scientific studies

	r															r	
Course						Correla	ation w	ith prog	gram ou	tcomes	5					Correlation wi	
Outcome																pro	ogram
																sp	ecific
																outcomes	
	РО	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	PO	PO	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
AS1102.1	1												1				
AS1102.2					1	1											
AS1102.3		1			1												
AS1102.4	1												1				
Average	0.50	0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00

<b>Course Code</b>	: CS1102
<b>Course Name</b>	: Data Structures
Course Outco	• On successful completion of this course, the students will be able to
CS1102.1.	Write programs for performing basic operations like insertion, deletion, searching, sorting, merging, traversal etc. on various data structures like array, queue, stack, linked list, tree, graph.
CS1102.2.	Use and design appropriate data structures for solving a variety of computational problem.
CS1102.3.	Develop test cases for their programs and debug the code.
CS1102.4.	Analyze the algorithms in terms of asymptotic time and space complexity.
CS1102.5.	Implement and compare various searching and sorting algorithms
CS1102.6.	Convert a recursive algorithm to non-recursive algorithm.

Course						Correla	ation w	ith prog	gram ou	itcomes	5					Corre	lation
Outcome																with p	rogram
																spe	cific
																outc	omes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1102.1	1		1		1	1						1					2
CS1102.2			1		1	1										2	2
CS1102.3	2			1	1	1				1			1				2
CS1102.4		1			1		1					2				2	2
CS1102.5	1				1		1									2	2
CS1102.6	1			1	1						1		1			2	2
Average	0.83	0.17	0.33	0.33	1.00	0.50	0.33	0.00	0.00	0.17	0.17	0.50	0.33	0.00	0.00	1.33	2.00

Course Cod	le : ES1106
Course Nan	ne : Computational Engineering Analysis- I
<b>Course Out</b>	<b>comes</b> : On successful completion of this course, the students will be able to
ES1106.1.	Solve ordinary differential equations through various techniques.
ES1106.2.	Determine the structural behavior of the body by determining the stresses, strains
	produced by the application of load.
ES1106.3.	Analyze the concept of buckling and be able to solve the problems related to column
	and struts.
ES1106.4.	Model the problems of column and struts mathematically in terms of ordinary
	differential equations and solve them using the appropriate method.
ES1106.5.	Simulate the solutions of the above-mentioned models of columns and struts.
ES1106.6.	Analyze a function of complex variables in terms of analyticity, poles and zeroes.
ES1106.7.	Find Laplace and inverse Laplace transforms of given function and use Laplace
	transform to solve ordinary differential equations.
ES1106.8.	Design and Evaluate the LC, RC & RL Networks using Foster's and Cauer Forms
ES1106.9.	Analyze stability criteria for electrical network using pole zero plot and routh-hurwitz
	polynomials.

ES1106.10. Model and simulate electrical networks using Proteus simulator/ Virtual lab.

Course						Correla	ation wi	ith prog	gram ou	itcomes						Correl	ation with
Outcome																program	
																sp	ecific
		_	-	_	_		-	_	-				-		-	out	comes
	PO	PO	РО	PO	PO	PO	РО	PO	РО	РО	РО	PO	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ES1106.1					2	2	2	1	1		1	1					
ES1106.2					2			2									
ES1106.3					1			1							1		
ES1106.4		1			1	2	2	1	1	1	2	1					
ES1106.5							2	1		1							
ES1106.6					2												
ES1106.7					2	2	1	1	1		1	2					
ES1106.8					2	2		2			1	1		1			
ES1106.9					2	2		1			1	1					
ES1106.10	1						1		1								
Average	0.10	0.10	0.00	0.00	1.40	1.00	0.80	1.00	0.40	0.20	0.60	0.60	0.00	0.10	0.10	0.00	0.00

Course Code	: ES1107
Course Name	: Engineering Measurements and Machines
<b>Course Outcomes</b>	:

ES1107.1: Evaluate suitable electrical and non-electrical instruments for measuring physical quantities.

ES1107.2: Analyze the construction, characteristics and applications of various types of rotating machines.

ES1107.3: Analyze the working of any mechanical and electrical machine using mathematical model.

ES1107.4: Integrate the sensors for monitoring and automation of electrical and mechanical systems.

ES1107.5: Design electro-mechanical machines as per Indian standards.

Course		Correlation with program outcomes													Correlation with		
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ES1107.1	2	1	2		1	1	1				1	1	1	1			
ES1107.2		1			1		1	1	1								
ES1107.3				1	1	2		1			1						
ES1107.4	1	1	1		1	1	1				1		1				
ES1107.5	1	1	1	1		1	1	2			1	1					
Average	0.80	0.40	0.40	0.20	1.20	1.20	1.00	0.80	0.60	0.00	0.80	0.40	0.40	0.20	0.00	0.00	0.00

Course Code	: E	E1101				
Course Name	:E	lectronic I	Devices &	& Circ	cuits	
<b>Course Outcom</b>	es :					
0 6 1	· ·	6.1.	. 4			

On successful completion of this course, the students will be able to

EE1101.1. Analyze characteristics of electronic components, devices, and circuits

EE1101.2. Apply electronic devices and circuits to various engineering applications

EE1101.3. Design and analyze different amplifier configurations

EE1101.4. Analyze input-output characteristics of a given complex network

EE1101.5. Design efficient power amplifiers with least harmonic distortion

Course		Correlation with program outcomes								Correlation with							
Outcome																pro	ogram
													specific				
													outcomes				
	РО	РО	РО	PO	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
EE1101.1	1		1		1		1	1	1							2	2
EE1101.2	1		1		1	1		1	1	1				1		2	2
EE1101.3						1		1	1	1						1	1
EE1101.4					1				1	1						1	
EE1101.5					1	1			1					1		1	
Average	0.40	0.00	0.40	0.00	0.80	0.60	0.20	0.60	1.00	0.60	0.00	0.00	0.00	0.40	0.00	1.40	1.00

<b>Course Cod</b>	e : CC1103
Course Nam	e : Perspectives on Contemporary Issues
<b>Course Out</b>	comes :
CC1103.1.	Identify different perspectives objectively.
CC1103.2.	Explain interconnectedness of the issues and their impact at micro and macro levels.
CC1103.3.	Recognize their own beliefs, biases, claims and assumptions
CC1103.4.	Evaluate sources, argue and defend effectively

Course						Correla	ation w	ith prog	gram ou	tcomes	;					Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	РО	РО	РО	PO	PO	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
CC1103.1	1		1					1			1	1					
CC1103.2						1					1	1	1				
CC1103.3											1	1	1				
CC1103.4	1		1									1	1				
Average	0.50	0.00	0.50	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.75	1.00	0.75	0.00	0.00	0.00	0.00

Course Cod	le : IL1101
Course Nan	ne : Management Perspectives
<b>Course Out</b>	comes :
IL1101.1.	Comprehend the importance of management and its functional areas in businesses
	and also its interaction with technology.
IL1101.2.	Highlight specific external and internal issues impacting businesses.
IL1101.3.	Integrate and analyze multiple dimensions of management aspects to solve business
	problems.
IL1101.4.	Evaluate the aspects that management might consider when evaluating technical and
	engineering projects such as planning and scheduling, personnel management, cost
	control etc. from a management perspective

Course						Correla	ation wi	ith prog	gram ou	tcomes	5					Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	PO	РО	РО	РО	РО	PO	РО	PO	РО	PO	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
IL1101.1	1				1												
IL1101.2	1	1											1				
IL1101.3	2		1		1						1		1				
IL1101.4	1			1							2	1					
Average	1.25	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.25	0.50	0.00	0.00	0.00	0.00

<b>Course Code</b>	: EE1107
Course Name	: Power Systems-I
<b>Course Outcomes</b>	:

- EE1107.1. Choose the appropriate type of power generating station in consideration to cost, environment, and societal issues.
- EE1107.2. Review different tariff model and select the most appropriate model for a given scenario to optimize the revenue.
- EE1107.3. Evaluate the suitability of installing overhead and underground power transmission strategies considering electrical, mechanical, environmental, performance, safety and economic constraints.
- EE1107.4. Develop and use mathematical models for performance analysis of transmission and distribution networks.
- EE1107.5. Design earthing system and take other measures to avoid electrical hazards.

Course						Correla	ation wi	ith prog	gram ou	tcomes	5					Correlation with	
Outcome																pro	ogram
														specific			
													outcomes				
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PO	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
EE1107.1	2	1	2		1	1	1					1	1	1	1	1	1
EE1107.2	1	1	1		1		1	1	1			1				1	1
EE1107.3	1	1		1	1	2		1		1	1		1			1	
EE1107.4					1	1	1									1	1
EE1107.5	1	1	1	1		1	1	2					1		1	2	1
Average	1.00	0.80	0.80	0.40	0.80	1.00	0.80	0.80	0.20	0.20	0.20	0.40	0.60	0.20	0.40	1.20	0.80

Course Code	: EE1110
<b>Course Name</b>	: Digital System Design
Course Outcomes	•

On successful completion of this course, the students will be able to:

- EE1110.1 Describe Hardware description languages (HDL),
- EE1110.2 Design Digital Circuits,
- EE1110.3 Write behavioral, structural and dataflow models of digital circuits
- EE1110.4 Synthesize RTL models to standard cell libraries and FPGAs
- EE1110.5 Implement FSM using HDL.

Course						Correla	ation w	ith prog	gram ou	tcomes	5					Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	РО	РО	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
EE1110.1	2				1											2	1
EE1110.2					1											2	1
EE1110.3					1					1							1
EE1110.4	1					1		1		1				2		2	2
EE1110.5	2					1			2					2		2	2
Average	1.00	0.00	0.00	0.00	0.60	0.40	0.00	0.20	0.40	0.40	0.00	0.00	0.00	0.80	0.00	1.60	1.40

Course Cod	le : ES1109
Course Nan	ne : Computational Engineering Analysis – II
<b>Course Out</b>	comes :
On successful	al completion of this course, the students will be able to:
ES1109.1.	Classify various types of partial differential equations and solve them through
	various analytical and numerical methods.
ES1109.2.	Formulate and analyze differential equations especially Navier stokes and energy
	equations and use numerical methods for solving the same.
ES1109.3.	Use Numerical method for solving partial differential equations using finite
	difference method.
ES1109.4.	Find Fourier and inverse Fourier transforms of given function and use Fourier
	transform to solve partial differential equations.
ES1109.5.	Find Z-transform and inverse Z-transforms of given functions and use them to
	analyze control systems.
ES1109.6.	Design and analyse various types of filters and attenuators to minimize power
	losses and improve signal quality.
ES1109.7.	Solve problems involving vertex and edge connectivity, planarity and crossing

numbers.

Course		Correlation with program outcomes								Correlation							
Outcome																with p	rogram
														specific			
																outco	omes
	PO	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1109.1	1				1	1		1			1						
ES1109.2	2		2		2	2	1	2			1		1	2			
ES1109.3						1	2										
ES1109.4					2	2		1			1						
ES1109.5	1		1		2	2		1			1			1			
ES1109.6		1				1	2			2				1			
ES1109.7						1	2	2						1			
Average	0.57	0.14	0.43	0.00	1.00	1.43	1.00	1.00	0.00	0.29	0.57	0.00	0.14	0.71	0.00	0.00	0.00

<b>Course Code</b>	: EE1103
Course Name	e : Advanced Electrical Machines
<b>Course Outco</b>	omes :
On successful	completion of this course, the students will be able to
EE1103.1.	Develop intuitive concepts regarding fundamental electromagnetic laws governing working of electrical machines including transformers, generators and motors
EE1103.2.	Develop deep insight relating to construction, detailed working and modern-day applications of mentioned electrical machines
EE1103.3.	Develop and analyze mathematical models for AC and DC machines under varying load conditions
EE1103.4.	Identify, analyze and evaluate power conversion and control techniques to interface with an electrical machine.
EE1103.5.	Analyze and evaluate the safety and compliance requirements of an electrical machine.

Course						Correla	ation w	ith prog	gram ou	tcomes	5					Correl	Correlation with		
Outcome																pro	program		
																specific			
																outcomes			
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2		
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1			
EE1103.1	1				1	1		1	1			1				1			
EE1103.2	1				1	1						1				1	1		
EE1103.3	1					1		1	1	1			1			1	1		
EE1103.4		1			1	1	1				1			1					
EE1103.5	1	1	1	1	1	1	1	1					1			2	1		
Average	0.80	0.40	0.20	0.20	0.80	1.00	0.40	0.60	0.40	0.20	0.20	0.40	0.40	0.20	0.00	1.00	0.60		

<b>Course Code</b>	: EE1104
<b>Course Name</b>	: Electromagnetics and Microwaves
<b>Course Outcomes</b>	
On successful com	pletion of this course, the students will be able to
EE1104.1. Anal	yze static electromagnetic field in cables, coils, etc., used in electric power
trans	mission circuits.
EE1104.2. Anal	yze fluctuating electromagnetic fields in different medium, e.g., linear and
isotr	opic medium using Maxwell's equations.
EE1104.3. Anal	yze characteristics of EM waves under time varying potentials and
pola	ization of EM waves due to different mode of transmission.
EE1104.4. Anal	yze wave propagation through different transmission lines and plane
elect	romagnetic waves in homogeneous media.
EE1104.5. Anal	yze the amount of electromagnetic noise generated by a device and test
Elec	tromagnetic compatibility (EMC) and electromagnetic interference (EMI).
EE1104.6. Desi	gn and Analyze SWR, cutoff frequency, guide wavelength, etc and
Char	acterize microwave junctions like tees

EE1104.7. Design and Characterize microwave corner, bends & twists and directional couplers, isolators, circulators, and attenuators

EE1104.8. Analyze the applications of microwave generators like klystrons & magnetrons

Course						Correla	ation wi	ith prog	gram ou	tcomes						Correlation with		
Outcome																pro	program	
																specific		
																outcomes		
	PO P															PSO-	PSO-2	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1		
EE1104.1			1		1			1	1							2	1	
EE1104.2					1			1								2	1	
EE1104.3																2	1	
EE1104.4									1	1						2	1	
EE1104.5	1		2	1	1	1	1	1	1			1	2	2		2	2	
EE1104.6						1			1	1		1		1		2	1	
EE1104.7					1				1	1						2	1	
EE1104.8					1				1	1						1	1	
Average	0.13	0.00	0.38	0.13	0.63	0.25	0.13	0.38	0.75	0.50	0.00	0.25	0.25	0.38	0.00	1.88	1.13	

Course Cod	e : EE1105
<b>Course Nan</b>	ne : Signals and Control System
<b>Course Out</b>	comes :
On successfu	al completion of this course, the students will be able to:
EE1105.1.	Identify and differentiate signals, systems, and their properties,
EE1105.2.	evaluate Fourier, Laplace, and z-transform for continuous and discrete time systems,
EE1105.3.	apply properties like symmetry, time scaling, time shifting, frequency shifting, time
	differentiation, time integration, time convolution, frequency convolution, inverse
	transform on continuous and discrete signals,
EE1105.4.	design open loop or closed loop control system of mechanical, electrical, thermal,
	chemical, or analogous systems,
EE1105.5.	convert linear system to discrete system through sampling,
EE1105.6.	solve the control system using block diagram reduction method and Mason's gain
	formula,
EE1105.7.	perform the error analysis on the system,
EE1105.8.	evaluate the stability of the system and effect of parameter variation on the stability
	using pole-zero location method, Routh-Hurwitz criterion, and root locus technique,
EE1105.9.	analyse the control system in frequency domain and time domain,
EE1105.10.	frequency analysis plots viz. Bode plot, Polar plot, and Nyquist Plot,

EE1105.11. improve a system as per design and equipment standards keeping energy efficiency in consideration.

Course	Correlation with program outcomes															Correlation with		
Outcome																pro	ogram	
																sp	specific	
		1	T	1	1	1	1	T		1	T	1			1	out	comes	
	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	PO	PO	PO	PO	PSO-	PSO-2	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1		
EE1105.1	1			1	1		1									1	1	
EE1105.2	1				1											1		
EE1105.3	1						1									1		
EE1105.4	1				1		1							1		1	1	
EE1105.5					1								1			1		
EE1105.6	1						1											
EE1105.7	1				1											1		
EE1105.8	1				1		1									1	1	
EE1105.9	1				1	1	1									1	1	
EE1105.10	1				1	1	1									1	1	
EE1105.11	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	
Average	0.91	0.09	0.09	0.18	0.82	0.27	0.73	0.09	0.09	0.09	0.09	0.00	0.18	0.18	0.09	0.91	0.55	

<b>Course Code</b>	: CC1104
Course Nam	e : Communication and Identity
<b>Course Outc</b>	omes :
CC1104.1.	Analyse their personal identities, both private and social
CC1104.2.	Identify their different values, strengths and areas of professional interest
CC1104.3.	Articulate their personal statement and use it to craft an influential pitch
CC1104.4.	Express themselves through various communication formats on different platforms

Course						Correla	ation wi	ith prog	gram ou	tcomes						Correl	Correlation with	
Outcome																pro	ogram	
																	specific	
																	outcomes	
	РО	PO	РО	РО	РО	РО	РО	PO	PO	РО	РО	РО	РО	РО	РО	PSO-	PSO-2	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1		
CC1104.1													1	1				
CC1104.2	1		2	1										2				
CC1104.3													1					
CC1104.4													2					
Average	0.25	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.00	

Course Code	: IL1102
<b>Course Name</b>	: Introduction to Design
<b>Course Outcomes</b>	:

- IL1102.1. Identify the user and build it's persona.
- IL1102.2. Sketch their ideas on paper to visualize and assess viability.
- IL1102.3. Create a plan for process and management to materialize the desired idea.
- IL1102.4. Test the material for possibilities and capabilities.
- IL1102.5. Develop skills of joinery, material manipulation and various hand tools.
- IL1102.6. Develop technical and narrative skills useful for both film and animation.
- IL1102.7. Develop troubleshooting and problem solving skills.

Course						Correla	ation w	ith prog	gram ou	tcomes	5					Correl	Correlation with		
Outcome																pro	program		
																specific			
																outcomes			
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-2		
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1			
IL1102.1	1								1	1			1	1					
IL1102.2	2						1						2						
IL1102.3	1						1	1						2					
IL1102.4	1						1	1											
IL1102.5							1	1											
IL1102.6	2						1						1						
IL1102.7	1		1			1	1												
Average	1.14	0.00	0.14	0.00	0.00	0.14	0.86	0.43	0.14	0.14	0.00	0.00	0.57	0.43	0.00	0.00	0.00		

<b>Course Code</b>	: EE1109
Course Name	: Analog and Digital Communications
Course Outco	omes :
On successful	completion of this course, the students will be able to:
EE1109.1:	Apply the knowledge of signals and system to analyze the communication system.
EE1109.2:	Implement and analyze various analog modulation and demodulation techniques as
	per ITU standards.
EE1109.3:	Use the sampling theorem to determine optimum sampling frequency for a signal.
EE1109.4:	Implement and analyze various digital modulation and demodulation techniques.
EE1109.5:	Evaluate the performance of analog and digital communication systems in the
	presence of white noise

EE1109.6: presence of white noise. Improve receiver's performance by applying various algorithms.

Course Outcome						Correla	ation w	ith prog	gram ou	tcomes	;					Correla with p specific outcom	Correlation with program specific outcomes	
	PO     <															PSO	PSO	
	1	2a	2b	2c	- 3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
EE1109.1	1			1	1		1	1			1	1	1			1	1	
EE1109.2		1			1		1	1	1		1		1			2	2	
EE1109.3	1					1	1	1	2				1			1	1	
EE1109.4		1					1	2	1	1	1		1	1		2	3	
EE1109.5			1		1	1		1	1	1	1	1		1		1	3	
EE1109.6	1		1				1		1				2	1		1	2	
Average	0.50	0.33	0.33	0.17	0.50	0.33	0.83	1.00	1.00	0.33	0.67	0.33	1.00	0.50	0.00	1.33	2.00	
<b>Course Code</b>	: EE1102																	
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Course Name	: Analog Circuits																	
<b>Course Outcomes</b>	:																	

On successful completion of this course, the students will be able to:

- EE1102.1 Explain electrical characteristics of op-amps and their open loop configurations,
- EE1102.2 Design inverting, noninverting, and differential amplifiers,
- EE1102.3 Find out frequency response, stability, transient response, bandwidth, maximum output voltage, and other important parameters of an op-amp with and without feedback
- EE1102.4 Analyze and design summing and differential amplifiers, voltage to current converters, low voltage dc voltmeters, low voltage ac voltmeters, zener diode testers, light-emitting diode testers, and integrator and differentiator circuits
- EE1102.5 Design and analyze filters and oscillators viz., low-pass filters, high-pass filters, band-pass filters, band-reject filters, Phase shift oscillators, Wien bridge oscillators, quadrature oscillators, square wave generators, triangular wave generators, and sawtooth wave generators.
- EE1102.6 Fabricate and design some op-amp based devices such as power supplies, audio function generators, LED temperature indicators, dc motor speed controllers, appliance timers, sirens/alarms etc.
- EE1102.7 Test the performance of different circuits as per IEEE, IEC, ISO and other standards.

Course						Correla	tion wi	ith prog	ram ou	tcomes	5					Correlation	
Outcome													with program				
														spe	cific		
												outc	omes				
	PO	PO	PO	PO	PO	РО	РО	PO	РО	PO	PO	PO	РО	РО	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
EE1102.1	2				1			1									
EE1102.2					2			1									
EE1102.3																2	1
EE1102.4																2	1
EE1102.5	2							2						1		2	1
EE1102.6	2							2		1				1		2	1
EE1102.7	2							2		1							
Average	1.14	0.00	0.00	0.00	0.43	0.00	0.00	1.14	0.00	0.29	0.00	0.00	0.00	0.29	0.00	1.14	0.57

<b>Course Code</b>	: CC1105
<b>Course Name</b>	: Understanding and Managing Conflict
<b>Course Outcomes</b>	:

#### **Course Outcomes**

CC1105.1. Define a group and explain the stages of group development

CC1105.2. Describe conflict and explain types and causes of conflict

CC1105.3. Use inquiry and advocacy to engage with groups

CC1105.4. Give and receive feedback effectively

CC1105.5. Identify sources of conflict and manage them using difference conflict handling styles

Course						Correla	ation wi	ith prog	gram ou	tcomes						Correlation with	
Outcome													program				
													specific				
													out	comes			
	PO	PO	РО	РО	РО	PO	PO	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
CC1105.1	1										2		1				
CC1105.2	1							1									
CC1105.3	1		1						1		2	1	1				
CC1105.4	1										1		1				
CC1105.5	1										1	1	1				
Average	1.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1.20	0.40	0.80	0.00	0.00	0.00	0.00

Course Code	: EE1111
Course Name	: Introduction to Internet of Things (IoT)

#### **Course Outcomes** :

On successful completion of this course, the students will be able to:

- EE1111.1: Interface the Analog and Digital sensors to Node-MCU.
- EE1111.2: Develop Embedded C programs to read sensor data and upload to public cloud platform.
- EE1111.3: Use Python-based IDE (integrated development environments) for the Raspberry Pi.
- EE1111.4: Interface Raspberry Pi with I/O devices.
- EE1111.5: Visualize sensor data uploaded on public cloud.
- EE1111.6: Apply standard protocol(s) for implementation of IoT Systems.
- EE1111.7: Analyze and Improve existing systems with innovative IoT based approaches.

Course Outcome		Correlation with program outcomes											Correlation with program specific outcomes				
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO 1	PSO 2
EE1111.1								1		1	1						
EE1111.2							1	1	1		1						
EE1111.3								1		1							
EE1111.4								1	1	1	1		1	1			
EE1111.5							1	1		1	1			1			
EE1111.6									1	1			1	1			
EE1111.7									1	1	1						
Average	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.71	0.57	0.86	0.71	0.00	0.29	0.43	0.00	0.00	0.00

<b>Course Code</b>	: PR1101
Course Name	: Automation Project
<b>Course Outcomes</b>	:

On successful completion of this course, the students will be able to:

- PR1101.1 design and implement a complete project in IoT/Automation using microcontroller/SOC interfaced with sensors or any other automation hardware/tools,
- PR1101.2 apply anyone/more standard data communication/IoT protocol(s),
- PR1101.3 use cloud servers for data streaming/logging and analytic techniques,
- PR1101.4 implement algorithms/signal processing using the data at edge/cloud,
- PR1101.5 deploy techniques to conserve bandwidth/energy/other resources and achieve cost economy for project.

Course						Correla	ation w	ith prog	gram ou	itcomes						Correlation with	
Outcome																pro	ogram
												specific					
													out	comes			
	РО	РО	PO	РО	РО	РО	РО	PO	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
PR1101.1	2				2					2		2		3			
PR1101.2						2											
PR1101.3							2										
PR1101.4	2								2								
PR1101.5					2		2										
Average	0.80	0.00	0.00	0.00	0.80	0.40	0.80	0.00	0.40	0.40	0.00	0.40	0.00	0.60	0.00	0.00	0.00

<b>Course Code</b>	: EE1112
<b>Course Name</b>	: Industrial Electronics
Course Outcomes	

#### Course Outcomes :

EE1112.1. Analyze the characteristics of power devices under different load condition

EE1112.2. Choose appropriate power devices for different requirement of power conversion, and speed control of drives. Also analyze and evaluate their performance

EE1112.3. Design an electric vehicle charging station with solar PV system.

EE1112.4. Design battery pack using lithium ion batteries.

EE1112.5. Use IEC standards for design and analysis of power electronics system

Course						Correla	ation wi	ith prog	gram ou	tcomes						Correlation with	
Outcome													program				
														sp	ecific		
													out	comes			
	РО	РО	PO	PO	РО	РО	РО	PO	РО	PO	РО	PO	PO	РО	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
EE1112.1	1						1									1	1
EE1112.2	1															2	2
EE1112.3			1		1		1		2	1	2	1		2	2	2	3
EE1112.4			1		2		2		2	1	2	2		2	2	2	3
EE1112.5						1							2		1	2	2
Average	0.40	0.00	0.40	0.00	0.60	0.20	0.80	0.00	0.80	0.40	0.80	0.60	0.40	0.80	1.00	1.80	2.20

Course Code	: EE1208
Course Name	: Digital Communication Networks

#### **Course Outcomes** :

On successful completion of this course, the students will be able to

- EE1208.1. Analyze the OSI model of networks.
- EE1208.2. Analyze the various architectures employed in digital communication networks.
- EE1208.3. Analyze the different protocols used in the digital networks.
- EE1208.4. Design issues & protocols of wireless LANs. Emphasis on IEEE 802.11 standards. WiMax mobility support & broadband applications.
- EE1208.5. Formulate, solve & understand research issues in wireless networks
- EE1208.6. Design ad-hoc networks, sensor networks & mesh networks
- EE1208.7. Analyze satellite, optical and mobile cellular network architectures & protocols and their applications

EE1208.8.	Implement	quality	of service	& network	management	functions
	1				0	

Course		Correlation with program outcomes Correlation												ation with			
Outcome																program	
																sp	ecific
																out	comes
	РО	PO P												РО	PSO-	PSO-2	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
EE1208.1					1		1	1	1							2	2
EE1208.2			1		1	1	2		3	1						2	2
EE1208.3			1	2	1		1		1							2	2
EE1208.4			1	1			1		3	1						2	2
EE1208.5	1		1	1	1		1	2	1	1			1	2		2	2
EE1208.6					1			1	1	1						2	2
EE1208.7	1		1		1		1	1	2	1						1	1
EE1208.8			1	1	1		1	1	1	1				1		2	2
Average	0.25	0.00	0.75	0.63	0.88	0.13	1.00	0.75	1.63	0.75	0.00	0.00	0.13	0.38	0.00	1.88	1.88

<b>Course Code</b>	: EE1114
Course Name	: Power System-II

:

#### **Course Outcomes**

EE1114.1. Develop the computational models for Power system analysis including per unit system and stability.

- EE1114.2. Analyze the performance of power system under symmetrical and unsymmetrical fault conditions.
- EE1114.3. Evaluate the model of power system components during normal and fault conditions.
- EE1114.4. Evaluate the power system dynamics and its stability during normal and abnormal conditions according to IEEE standards.
- EE1114.5. Assess the different methods of control and compensation to choose the best option so that social and environmental problems are minimized and recognize the need to continuously follow the advancements in technology and incorporate them in the present system to improve efficiency and increase the flexibility and quality of operation.

Course		Correlation with program outcomes														Correlation with	
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ES1114.1	2	1			1	1	1	1					1			1	1
ES1114.2	1				1	1	1	1					1			1	1
ES1114.3					1	1	1	2	1	1			1			1	1
ES1114.4		1		1	3	1	1	1	1							1	1
ES1114.5		1	1		1	1	1	1	1	1	1	1	1	2	2	2	1
Average	0.60	0.60	0.20	0.20	1.40	1.00	1.00	1.20	0.60	0.40	0.20	0.20	0.80	0.40	0.40	1.20	1.00

Course Code	: EE1115
Course Name	: Digital Signal Processing
<b>Course Outcomes</b>	:

On successful completion of this course, the students will be able to

EE1115.1. Analyze the various classifications & operations on signals

EE1115.2. Analyze the frequency & time domain representations of signals

EE1115.3. Implement fast Fourier transforms on signals

EE1115.4. Implement discrete time systems

EE1115.5. Analyze and solve problems using z transform

EE1115.6. Implement digital filter design techniques

EE1115.7. Implement IEEE standards for efficient signal processing

Course	Correlation with program outcomes													Correlation with			
Outcome																program	
																sp	ecific
																out	comes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	РО	РО	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
EE1115.1					2			2	1	1						2	1
EE1115.2								1	1	1						2	1
EE1115.3					1	1		1	1	1						2	1
EE1115.4					2	1	1	1	1	1						2	2
EE1115.5							1	1	1	1		1				2	1
EE1115.6						1	1	1	1	1		1		1		2	1
EE1115.7	1		2	2	1		1	1	1	1		1	2	2		2	2
Average	0.14	0.00	0.29	0.29	0.86	0.43	0.57	1.14	1.00	1.00	0.00	0.43	0.29	0.43	0.00	2.00	1.29

<b>Course Code</b>	: CC1106
Course Name	e : Critical Thinking for Decisions at Workplace
<b>Course Outc</b>	omes :
CC1106.1.	Apply techniques of Critical Thinking to analyse organizational problems through
	positive inquiry
CC1106.2.	Describe and analyse appropriate problem-solving and ethical decision-making
	processes
CC1106.3.	Choose the most effective and logical decision among multiple alternatives
CC1106.4.	Evaluate solutions and anticipate likely risks based on purpose, context and ethics

Course						Correla	ation w	ith prog	gram ou	tcomes						Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	PO	РО	РО	РО	РО	PO	PO	РО	РО	РО	РО	РО	PO	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
CC1106.1	1										2		2				
CC1106.2	2					1		2					1				
CC1106.3									1		1	2	1				
CC1106.4							1	2				2					
Average	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00

Course Code	PO1	PO2a	PO2b	PO2c	PO3a	PO3b	PO3c	PO4a	PO4b	PO4c	PO5a	PO5b	PO6	PO7a	PO7b	PSO1	PSO2
AS1101	1.00	0.00	0.25	0.00	0.38	0.13	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.13	0.13	0.00	0.00
CC1101	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.60	0.00	0.40	0.00	0.00	0.00	0.00
ES1101	0.00	0.33	0.56	0.00	1.00	0.78	0.00	0.67	0.00	0.33	0.89	0.00	0.56	0.56	0.00	0.00	0.00
ES1102	1.17	0.17	0.17	0.17	1.17	0.67	0.67	0.17	0.00	0.00	0.33	0.33	0.33	0.67	0.00	0.00	0.00
AS1102	0.50	0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
CC1102	0.00	0.00	0.40	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.60	0.00	0.00	0.00	0.00
CS1101	0.00	0.00	0.00	0.00	0.40	0.40	0.20	0.00	0.00	0.00	0.40	0.40	0.00	0.40	0.00	0.00	0.00
ES1103	0.50	0.00	0.00	0.00	0.38	1.75	1.38	0.00	0.25	0.00	0.88	0.00	0.75	0.00	0.00	0.00	0.00
ES1104	0.50	0.00	0.00	0.00	0.92	0.33	0.25	0.33	0.25	0.00	0.00	0.50	0.17	0.67	0.00	0.00	0.00
ES1105	0.67	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
ME1101	0.50	0.00	0.00	0.00	1.00	1.00	0.50	0.75	0.75	0.00	0.50	0.75	0.00	0.00	0.00	1.00	1.25
ES1106	0.10	0.10	0.00	0.00	1.40	1.00	0.80	1.00	0.40	0.20	0.60	0.60	0.00	0.10	0.10	0.00	0.00
ES1107	0.80	0.40	0.40	0.20	1.20	1.20	1.00	0.80	0.60	0.00	0.80	0.40	0.40	0.20	0.00	0.00	0.00
ME1102	0.40	0.20	0.20	0.00	0.80	0.40	0.40	0.40	0.00	0.20	0.00	0.40	0.40	0.20	0.00	2.00	2.00
CC1103	0.50	0.00	0.50	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.75	1.00	0.75	0.00	0.00	0.00	0.00
IL1101	1.25	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.25	0.50	0.00	0.00	0.00	0.00
ME1104	0.50	0.33	0.17	0.00	0.67	0.33	0.33	0.67	0.00	0.17	0.00	0.50	0.33	0.33	0.00	2.00	1.67
ME1105	0.40	0.00	1.00	0.00	1.20	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.20
ES1109	0.57	0.14	0.43	0.00	1.00	1.43	1.00	1.00	0.00	0.29	0.57	0.00	0.14	0.71	0.00	0.00	0.00
ME1106	0.75	0.00	0.00	0.00	0.50	0.75	0.75	0.50	0.50	0.50	0.50	0.75	0.00	0.25	0.25	0.50	1.50
CC1104	0.25	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.00
IL1102	1.14	0.00	0.14	0.00	0.00	0.14	0.86	0.43	0.14	0.14	0.00	0.00	0.57	0.43	0.00	0.00	0.00
ME1107	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.75	0.00	0.50	0.00	0.25	0.00	0.00	0.25	0.50
ME1108	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.50	1.00	0.00	0.50	0.75	0.00	1.00	0.50	2.00	1.75
ME1109	0.50	0.00	0.00	0.00	1.50	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.50	2.00	1.50

**Program Articulation Matrix (B. Tech ME):** 

CC1105	1.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1.20	0.40	0.80	0.00	0.00	0.00	0.00
EE1111	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.71	0.57	0.86	0.71	0.00	0.29	0.43	0.00	0.00	0.00
PR1101	0.80	0.00	0.00	0.00	0.80	0.40	0.80	0.00	0.40	0.40	0.00	0.40	0.00	0.60	0.00	0.00	0.00
ME1110	0.75	0.25	0.25	0.75	1.00	1.00	1.00	1.00	0.50	0.00	0.00	0.00	0.00	1.00	0.50	2.00	2.00
ME1111	1.00	0.75	0.75	1.00	1.00	0.50	0.50	0.00	0.00	0.00	0.50	0.00	0.00	1.00	1.00	2.00	2.00
CC1106	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00
DE (1)																1.50	1.50
DE (2)																1.50	1.50
DE (3)																2.00	2.00
DE (4)																2.00	2.00
DE (5)																2.00	2.00
Total*	17.70	3.50	6.17	2.62	18.64	16.10	13.48	11.58	7.76	4.09	12.76	8.43	9.99	10.43	2.98	23.15	23.37
Program Articulation	С	N	N	N	С	С	AB	AB	N	N	AB	AB	AB	AB	Ν	С	С
Expectation	С	Ν	N/AB	Ν	С	AB	AB	AB	N/AB	Ν	AB	AB	AB	AB	Ν	C	C

# **Description of Levels of Program Articulation:**

Novice (N) (Low)	<ul> <li>Knows objective facts, features, and rules for determining actions with respect to this PO/PSO without being context sensitive.</li> <li>Has studied the basic concepts.</li> </ul>
Advanced beginner (AB) (Moderate)	<ul> <li>Recognizes common situations with respect to this PO/PSO that help in recalling which rules should be exercised, starts to recognize and handle situations not covered by given facts, features and rules.</li> <li>Has problem solving and repeated practice experience for common situations with respect to this PO/PSO.</li> </ul>
Competent (C) (High)	<ul> <li>Performs most standard actions with respect to this PO/PSO without conscious application of rules after considering the whole situation.</li> <li>Handles new situations through the appropriate application of rules, can design systems.</li> <li>May lead.</li> <li>Has demonstrated this PO/PSO through repeated engagements in advanced problem solving, projects, extensive practice in common and exception situations, and participated in professional networks.</li> </ul>

## Calculation Criteria for the Program Articulation Levels:

Novice (N) (Low)	Total* < 8
Advanced beginner (AB) (Moderate)	8 ≤ Total* < 16
Competent (C) (High)	$Total^* \ge 16$

# JK Lakshmipat University, Jaipur Institute of Engineering and Technology Department of Mechanical Engineering Course Structure for the B. Tech (Batch 2019-2023)

Semester				Courses				Credits
	Computational	Design and	Experimental	Fundamentals of				
	Data Analysis	Prototyping	Science-I	Communication				
Ι	ES1101	ES1102	AS1101	CC1101				21
	(10s 2 0)	(6s 0 0)	(104)	(201)				
	10	6	3	2				
	Calculus and	Fundamentals	Object Oriented	Energy and	Critical	Scientific		
	Applied	of Automation	Programming	Environmental	Thinking and	Derepactives		
	Mechanics	Engineering	riogramming	Studies	Storytelling	Terspectives		
II	ES1103	ES1104	CS1101	ES1105	CC1102	AS1102		20
	(6s 2 0)	(6s 2 0)	(104)	(100)	(201)	(Science Week)		
	6	6	3	1	2	2		
	Matariala	Computational	Engineering	Engineering	Perspectives on	Managamant		
	Engineering	Engineering	Measurements	Thermodynamics	Contemporary	Perspectives		
ш	Lingineering	Analysis-I	and Machines	Thermouynamics	Issues	Terspectives		22
111	ME1101	ES1106	ES1107	ME1102	CC1103	IL1101		
	(3 0 2)	(312)	(304)	(3 0 2)	(201)			
	4	5	5	4	2	2		
	Transport	Strength of	Computational	Production	Communication	Introduction	Mechanical	
	Phenomena	Material and	Engineering	Technology-I	and Identity	to Design	Engineering	
		Analysis	Analysis-II			to Design	CAD Lab	
IV	ME1104	ME1105	ES1109	ME1106	CC1104	IL1102	ME1107	23
	(3 0 2)	(3 0 2)	(312)	(3 0 2)	(201)	(Design Week)	(0 0 4)	
	4	4	5	4	2	2	2	
		Practice	e School - I (PS110	1) - (4 to 6 Weeks I	Duration) - 4 Cred	its	-	
	Theory of	Production			Understanding	Introduction	Automation	
	Machines	Technology-I	DE-I	OE-I	and Managing	to Internet of	Project	
V	1.140111105	reennorogy r			Conflict	Things	110,000	22
	ME1108	ME1109			CC1105	EE1111	PR1101	
	(3 0 2)	(3 0 2)			(200)			
	4	4	4	4	2	2	2	
	Design of				Critical	- ·		
	Machine	DE-II	Automobile	DE-III/ OE -	Thinking for	Emerging		
	Elements		Engineering	II/Minor Project	Decisions at	Tech Week		
VI	14110		2000		Workplace			20
	MEIIIO		MEIIII		CC1106			
		(302)	(302)	4	2	2		
	4	4	4	4	2	2		
*7**	DE-IV	DE-V	DE-VI	OE-III	Minor Project	{		
VII					PR1103	{		20
	4		4	4	4			1.
VIII	Pr	ractice School - II	/Entrepreneurial Pr	oject/Research Proje	ct/Semester at a pa	rtner University		16
				Total Credits				168

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	B.Tech (ME) (Batch: 2019-2023)	
Course Code	Course Name	Page No.
AS1101	Experimental Science-I	6
CC1101	Fundamentals of Communication	7
ES1101	Computational Data Analysis	8
ES1102	Design and Prototyping	9
AS1102	Scientific Perspectives	10
CC1102	Critical Thinking and Storytelling	11
CS1101	Object Oriented Programming	12
ES1103	Calculus and Applied Mechanics	13
ES1104	Fundamentals of Automation Engineering	14
ES1105	Energy and Environmental Studies	15
ME1101	Materials Engineering	16
ES1106	Computational Engineering Analysis-I	17
ES1107	Engineering Measurements and Machines	18
ME1102	Engineering Thermodynamics	19
CC1103	Perspectives on Contemporary Issues	20
IL1101	Management Perspectives	21
ME1104	Transport Phenomena	22
ME1105	Strength of Material and Analysis	23
ES1109	Computational Engineering Analysis-II	24
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CC1104	Communication and Identity	26
IL1102	Introduction to Design	27
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EE1111	Introduction to IoT	32
PR1101	Automation Project	33
ME1110	Design of Machine Elements	34
ME1111	Automobile Engineering	35
CC1106	Critical Thinking for Decisions at Workplace	36

# Course Name: Experimental Science-I

Course Outcomes: On successful completion of this course, the students will be able to

AS1101.1.	analyze ferromagnetic properties of any magnetic material and differentiate Soft
	and hard materials.
AS1101.2.	analyze thermoelectric effect of metal junctions due to temperature differences.
AS1101.3.	analyze nuclear radiation with respect to distance and thickness of absorbing media.
AS1101.4.	measure electrical properties e.g., specific resistance, time constant of various
	electrical components.
AS1101.5.	use Schroedinger equation and quantum mechanical approach to analyze behavior
	of the quantum particle under different potentials.
AS1101.6.	differentiate hard and soft water by determining its hardness of different water
	samples.

- AS1101.7. analyze conductivity of samples by different techniques such as volumetric titrations and conductometric.
- AS1101.8. determine properties of the lubricant/oil samples by Pensky-Martens and Red Viscometer.

Course						Correla	ation w	ith prog	gram ou	itcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outco	omes
	PO	PO     <															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
AS1101.1	1				1									1			
AS1101.2	1																
AS1101.3	1										1						
AS1101.4	1				1						1						
AS1101.5	1																
AS1101.6	1		1		1	1	1				1		1		1		
AS1101.7	1		1				1				1		1				
AS1101.8	1																
Average	1.00	0.00	0.25	0.00	0.38	0.13	0.25	0.00	0.00	0.00	0.50	0.00	0.25	0.13	0.13	0.00	0.00

# Course Code: CC1101

### Course Name: Fundamentals of Communication

- CC1101.1. Identify different cultural differences and their impact on communication.
- CC1101.2. Compose grammatically correct sentences and paragraphs.
- CC1101.3. Deliver effective oral presentations following appropriate kinesics and paralinguistic features.
- CC1101.4. Identify impact of cultural differences on communication.
- CC1101.5. Apply appropriate communication skills across settings, purposes, and audiences.

Course						Correls	ation w	ith proc	ram or	itcomes	2					Corre	lation
Course						conten	ution w	iiii piog		iteomes	,					- Conte	auton
Outcome																with p	rogram
																spee	cific
																outc	omes
	РО	O PO															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1101.1									1		1		1				
CC1101.2																	
CC1101.3	1										1						
CC1101.4																	
CC1101.5	1										1		1				
Average	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.60	0.00	0.40	0.00	0.00	0.00	0.00

# Course Name: Computational Data Analysis

ES1101.1.	Write Simple Python programs using various datatypes, control structures, decision
	statements, libraries, functions (M1)

- ES1101.2. Develop Python programs using Objects, Classes and Files (M1, M2)
- ES1101.3. Develop Programs for analyzing and interpreting Complex situations in various domains including sustainable development by combining various Linear Algebra, Statistics and Other Problem-Solving Techniques (M3)
- ES1101.4. Model Complex systems as Linear simultaneous equations and analyze the same using Matrix methods (M1)
- ES1101.5. Model Data as matrices and Find Eigen Values and Eigen Vectors and Apply the same for problem solving, e.g., ranking and performance analysis (M1)
- ES1101.6. Summarize and Visualize different datasets (M2)
- ES1101.7. Analyze and interpret different datasets using Discrete and Continuous Probability Distributions and Apply the same for problem solving, e.g., Goodness of Fit (M2)
- ES1101.8. Formulate and validate hypothesis with reference to different datasets (M2)
- ES1101.9. Apply correlation, regression, least square method and time series analysis for modeling, analysis, interpretation, and forecasting (M2)

Course						Correla	ation w	ith prog	gram ou	tcomes						Correla	ation with
Outcome								1 0	,							prograi	n specific
																out	comes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	150 2
ES1101.1																	
ES1101.2											1						
ES1101.3					1	1					1			1			
ES1101.4			1		1	1				1	1						
ES1101.5			1		1	1				1	1			1			
ES1101.6					1	1		1			1		2				
ES1101.7		1	1		1	1		1			1		1	1			
ES1101.8		1	1		2	1		2			1		1	1			
ES1101.9		1	1		2	1		2		1	1		1	1			
Average	0.00	0.33	0.56	0.00	1.00	0.78	0.00	0.67	0.00	0.33	0.89	0.00	0.56	0.56	0.00	0.00	0.00

### Course Name: Design and Prototyping

ES1102.1.	Approach design challenges from the perspective of the user and offer innovative
	solutions effectively.

- ES1102.2. Communicate and work in team towards a common goal.
- ES1102.3. Think creatively towards a fun based, desirable solution.
- ES1102.4. Develop the projection views of the products with dimensions and scales.
- ES1102.5. Create the schematic diagram and isometric view of the parts using AutoCAD.
- ES1102.6. Fabricate prototype by combining the different parts.

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	PO	PO	PO	PO	PO	РО	РО	PO	PO	РО	PO	РО	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1102.1	2	1	1	1										2			
ES1102.2											1	1	1				
ES1102.3	2				2	1	1	1						2			
ES1102.4					1	1	1										
ES1102.5	1				2	1	1										
ES1102.6	2				2	1	1				1	1	1				
Average	1.17	0.17	0.17	0.17	1.17	0.67	0.67	0.17	0.00	0.00	0.33	0.33	0.33	0.67	0.00	0.00	0.00

### **Course Name: Scientific Perspectives**

- AS1102.1. Distinguish between science, pseudo-science and other forms of knowledge.
- AS1102.2. Distinguish between science, engineering, technology and mathematics and also identify the opportunities for integrating these disciplines.
- AS1102.3. Use the scientific approach to identify and understand the societal problems
- AS1102.4. Explain, Design and carry out Scientific studies

Course						Correla	ation w	ith prog	gram ou	itcomes						Corre	lation
Outcome																with pr	rogram
																	cific
																	omes
	РО	PO         PO<															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
AS1102.1	1												1				
AS1102.2					1	1											
AS1102.3		1			1												
AS1102.4	1												1				
Average	0.50	0.25	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00

# Course Code: CC1102

# Course Name: Critical Thinking and Storytelling

Course Outcomes: On successful completion of this course, the student should be able to

- CC1102.1. Formulate intelligent questions to investigate.
- CC1102.2. Evaluate information and argument for correctness, consistency, relevance, and validity.
- CC1102.3. Compose well-structured and well-reasoned arguments.
- CC1102.4. Articulate and evaluate the impact of narratives.
- CC1102.5. Distinguish between facts, assumptions and opinion.

Course						Correla	ation w	ith prog	gram ou	itcomes	5					Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	PO	PO     <															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1102.1			1					1									
CC1102.2			1			1							1				
CC1102.3											1						
CC1102.4													1				
CC1102.5													1				
Average	0.00	0.00	0.40	0.00	0.00	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.60	0.00	0.00	0.00	0.00

# Course Name: Object Oriented Programming

Course Outcomes: On successful completion of this course, the students should be able to:

- CS1101.1. Develop Java Programs with the concepts of primitive data types, strings and arrays.
- CS1101.2. Develop Java Programs using Object Oriented Programming Principles such as Classes, Objects, Data Abstraction, Data Encapsulation, Overloading, Overriding, Polymorphism, Inheritance, and Interfaces.
- CS1101.3. Design, develop and debug programs in Core Java using coding and documentation standards.
- CS1101.4. Incorporate exception handling in Java Programs.
- CS1101.5. Use JDBC API connectivity in between Java Programs and database.

Course						Correla	ation w	ith prog	gram ou	itcomes	5					Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	PO	D     PO     PO <t< td=""><td>PSO-</td></t<>															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CS1101.1					1	1	1							1			
CS1101.2																	
CS1101.3					1	1					1	1		1			
CS1101.4																	
CS1101.5											1	1					
Average	0.00	0.00	0.00	0.00	0.40	0.40	0.20	0.00	0.00	0.00	0.40	0.40	0.00	0.40	0.00	0.00	0.00

### Course Name: Calculus and Applied Mechanics

- ES1103.1. apply analytical techniques to determine forces in structures
- ES1103.2. use commercial software (STAAD Pro.) to simulate a structure/frame and determine force in the members
- ES1103.3. model physical phenomena using calculus and solve using appropriate method
- ES1103.4. apply Newton's laws of motion and understand the concepts of dynamics concepts (force, momentum, work and energy)
- ES1103.5. interpret the geometrical significance of differential and integral calculus
- ES1103.6. solve problems of vector differentiation and integration
- ES1103.7. calculate the buoyant forces of objects with various shape and carryout the stability analysis
- ES1103.8. apply the concept of partial differentiation to solve optimization problems

Course						Correla	ation w	ith prog	gram ou	itcomes	5					Corre	lation
Outcome																with p	rogram
																spec	cific
					_	-	_	-	_					-	_	outco	omes
	PO	PO															PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1103.1						2					1		2				
ES1103.2						2	2				1						
ES1103.3	1				1	2	2		1		2		1				
ES1103.4	2				1	2	2				1						
ES1103.5	1				1	2	2										
ES1103.6						1	1										
ES1103.7						1	1		1		1		2				
ES1103.8						2	1				1		1				
Average	0.50	0.00	0.00	0.00	0.38	1.75	1.38	0.00	0.25	0.00	0.88	0.00	0.75	0.00	0.00	0.00	0.00

### Course Name: Fundamentals of Automation Engineering

Course Outcomes: On successful completion of this course, the students should be able to

- ES1104.1 Analyze electrical circuits using network theorems,
- ES1104.2 Measure electrical parameters of passive as well as active electrical components,
- ES1104.3 Design rectifier circuit using semiconductor devices,
- ES1104.4 Design filters for power conditioning,
- ES1104.5 Design and test a linear power supply for given specifications,
- ES1104.6 Design and build Printed Circuit Boards,
- ES1104.7 Use electrical safety practices while working on electrical projects,
- ES1104.8 Formulate mathematical models for basic electro-mechanical systems,
- ES1104.9 Design and simulate a basic analog open-loop control system,
- ES1104.10 Evaluate and simplify Boolean functions and design the minimized logic using logic gates,
- ES1104.11 Design basic combinational and sequential circuits with minimum complexity,
- ES1104.12 Implement combinatorial circuit using simulation tools.

Course						Correl	ation w	ith prog	ram out	tcomes						Corre	lation
Outcome																with p	rogram
																spe	cific
		1	1	1	1	1	1	1			1			1		outc	omes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1104.1					2			1									
ES1104.2						2								1			
ES1104.3					1			1									
ES1104.4					2							1		1			
ES1104.5					1							1		1			
ES1104.6							1		1			1		1			
ES1104.7	2						2						1				
ES1104.8	2				2			2						2			
ES1104.9					1							1		1			
ES1104.10																	
ES1104.11	2				2							1					
ES1104.12						2			2			1	1	1			
Average	0.50	0.00	0.00	0.00	0.92	0.33	0.25	0.33	0.25	0.00	0.00	0.50	0.17	0.67	0.00	0.00	0.00

# Course Name: Energy and Environmental Studies

Course Outcomes: On successful completion of this course, the student should be able to

- ES1105.1. Relate renewable energy with ecology & environment
- ES1105.2. Explain the climate change and threat to biodiversity
- ES1105.3. Describe the various pollution sources and their impacts on Environment

Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spe	cific
																outc	omes
	РО	PO	PO	PO	РО	PO	PO	РО	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1105.1	1					1											
ES1105.2		1									1						
ES1105.3	1				1												
Average	0.67	0.33	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00

Course Code	: ME1101
Course Name	: Materials Engineering

#### Course Outcomes :

- ME1101.1. Identify crystal structure, crystal defects and perform various mechanical tests as per ASTM standards to know properties of materials.
- ME1101.2. Evaluate materials on the basis of their static and dynamic failure criteria as per ASTM standards.
- ME1101.3. Perform various heat treatment processes to hold required mechanical properties in ferrous alloys.
- ME1101.4. Prioritize other ferrous and non-ferrous alloys for various applications.

Course						Correla	ation w	ith prog	gram ou	tcomes						Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ME1101.1					1	1	1					1				1	1
ME1101.2					1	1		1	1		1	1				1	1
ME1101.3	1				1	1	1	1	1							1	2
ME1101.4	1				1	1		1	1		1	1				1	1
Average	0.50	0.00	0.00	0.00	1.00	1.00	0.50	0.75	0.75	0.00	0.50	0.75	0.00	0.00	0.00	1.00	1.25

Course Name: Computational Engineering Analysis - I

Course Outcomes: On successful completion of this course, the students will be able to

- ES1106.1. Solve ordinary differential equations through various techniques.
- ES1106.2. Determine the structural behavior of the body by determining the stresses, strains produced by the application of load.
- ES1106.3. Analyze the concept of buckling and be able to solve the problems related to column and struts.
- ES1106.4. Model the problems of column and struts mathematically in terms of ordinary differential equations and solve them using the appropriate method.
- ES1106.5. Simulate the solutions of the above-mentioned models of columns and struts.
- ES1106.6. Analyze a function of complex variables in terms of analyticity, poles and zeroes.
- ES1106.7. Find Laplace and inverse Laplace transforms of given function and use Laplace transform to solve ordinary differential equations.
- ES1106.8. Design and Evaluate the LC, RC & RL Networks using Foster's and Cauer Forms
- ES1106.9. Analyze stability criteria for electrical network using pole zero plot and routhhurwitz polynomials

ES1106.10. Model and simulate electrical networks using Proteus simulator/ Virtual lab.

Course Outcome						Correl	ation w	ith prog	gram ou	tcomes						Corre wi prog spec	lation ith gram cific omes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1106.1					2	2	2	1	1		1	1					
ES1106.2					2			2									
ES1106.3					1			1							1		
ES1106.4		1			1	2	2	1	1	1	2	1					
ES1106.5							2	1		1							
ES1106.6					2												
ES1106.7					2	2	1	1	1		1	2					
ES1106.8					2	2		2			1	1		1			
ES1106.9					2	2		1			1	1					
ES1106.10	1						1		1								
Average	0.10	0.10	0.00	0.00	1.40	1.00	0.80	1.00	0.40	0.20	0.60	0.60	0.00	0.10	0.10	0.00	0.00

#### Course Name: Engineering Measurements and Machines

Course Outcomes: On successful completion of this course, the students be able to

- ES1107.1. Evaluate suitable electrical and non-electrical instruments for measuring physical quantities.
- ES1107.2. Analyze the construction, characteristics and applications of various types of rotating machines.
- ES1107.3. Analyze the working of any mechanical and electrical machine using mathematical model.
- ES1107.4. Integrate the sensors for monitoring and automation of electrical and mechanical systems.
- ES1107.5. Design electro-mechanical machines as per Indian standards.

Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outco	omes
	РО	PO	PO	PO	РО	РО	РО	РО	PO	PO	PO	РО	РО	РО	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
ES1107.1	2				2	1	1				1	1	1	1			
ES1107.2		1			1	1	1	1									
ES1107.3					1	2	1	1	1		1						
ES1107.4	1	1	1		1	1	1	1	1		1		1				
ES1107.5	1		1	1	1	1	1	1	1		1	1					
Average	0.80	0.40	0.40	0.20	1.20	1.20	1.00	0.80	0.60	0.00	0.80	0.40	0.40	0.20	0.00	0.00	0.00

Course Code	: ME1102
Course Name	: Engineering Thermodynamics
Course Outcon	es : After course completion, the student will be able to
ME1102.1.	identify the basic thermodynamic processes in our day to day life and industrial
	processes
ME1102.2.	judge the state of the pure substances such as compressed liquid, saturated liquid-
	vapor mixture and superheated vapour using property diagrams and tables.
ME1102.3.	apply the first law of thermodynamics to analyse the working of the nozzles,
	diffusers, turbines, compressors, throttling valves, mixing chambers, heat
	exchangers, pipe and duct flow
ME1102 4	another the second mass halon on far unstandy. flow me access

- ME1102.4. construct energy and mass balance for unsteady-flow processes.
- ME1102.5. assess thermodynamic applications using second law of thermodynamics to power and refrigeration cycle.

Course					-	Correla	ation w	ith prog	gram ou	tcomes						Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ME1102.1	1				1			1								2	2
ME1102.2					1											2	2
ME1102.3	1					1	1			1		1	1	1		2	2
ME1102.4		1			1	1		1								2	2
ME1102.5			1		1		1					1	1			2	2
Average	0.40	0.20	0.20	0.00	0.80	0.40	0.40	0.40	0.00	0.20	0.00	0.40	0.40	0.20	0.00	2.00	2.00

Course Code: CC1103

# Course Name: Perspectives on Contemporary Issues

- CC1103.1. Identify different perspectives objectively.
- CC1103.2. Explain interconnectedness of the issues and their impact at micro and macro levels.
- CC1103.3. Recognize their own beliefs, biases, claims and assumptions.
- CC1103.4. Evaluate sources, argue and defend effectively.

Course Outcome						Correla	ation w	ith prog	gram ou	itcomes	5					Corre with pr	lation rogram
																spec	cific omes
	РО	PO	РО	PO	РО	PO	РО	РО	РО	РО	РО	PO	РО	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1103.1	1		1					1			1	1					
CC1103.2						1					1	1	1				
CC1103.3											1	1	1				
CC1103.4	1		1									1	1				
Average	0.50	0.00	0.50	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.75	1.00	0.75	0.00	0.00	0.00	0.00

# Course Code: IL1101

#### Course Name: Management Perspectives

- IL1101.1. Comprehend the importance of management and its functional areas in businesses and also its interaction with technology.
- IL1101.2. Highlight specific external and internal issues impacting businesses.
- IL1101.3. Integrate and analyze multiple dimensions of management aspects to solve business problems.
- IL1101.4. Evaluate the aspects that management might consider when evaluating technical and engineering projects such as planning and scheduling, personnel management, cost control etc. from a management perspective

Course						Correla	ation w	ith prog	gram ou	tcomes	5					Corre	lation
Outcome																with pr	rogram
																spec	cific
																outco	omes
	PO	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
IL1101.1	1				1												
IL1101.2	1	1											1				
IL1101.3	2		1		1						1		1				
IL1101.4	1			1							2	1					
Average	1.25	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.75	0.25	0.50	0.00	0.00	0.00	0.00

<b>Course Code</b>	: ME1104
Course Name	: Transport Phenomena
Course Outcon	<b>nes</b> : After course completion, the student will be able to
ME1104.1.	identify the basic transport processes in our day to day life and industrial processes
ME1104.2.	apply the continuity, momentum and energy principles and dimensional analysis
ME1104.3.	formulate and analyse a heat transfer problem involving any of the three modes of
	heat transfer
ME1104.4.	apply the appropriate correlations to calculate heat transfer coefficient and heat
	flux for a range of heat transfer situations (Steady and unsteady)
ME1104.5.	design and model a real life low energy heat transfer equipment as per ASME standard
ME1104.6.	analyse the combined effect of heat, mass and momentum transport in a typical
	chemical engineering equipment (heat exchanger, catalyst bed, chemical reactor,
	etc.)

Course						Correla	ation w	ith prog	gram ou	tcomes	5					Correl	ation with
Outcome																pro	ogram
																sp	ecific
		-					-	-		-		-	-		-	out	comes
	PO	PO	PO	PO	PO	PO	РО	PO	PO	РО	PO	PO	PO	PO	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ME1104.1	1				1		1	1								2	
ME1104.2					1	1		1								2	2
ME1104.3	1				1		1	1		1						2	2
ME1104.4		1						1				1				2	2
ME1104.5		1				1						1	1	1		2	2
ME1104.6	1		1		1							1	1	1		2	2
Average	0.50	0.33	0.17	0.00	0.67	0.33	0.33	0.67	0.00	0.17	0.00	0.50	0.33	0.33	0.00	2.00	1.67

<b>Course Code</b>	: ME1105
Course Name	: Strength of Material and Analysis
Course Outcor	<b>nes</b> : After course completion, the student will be able to
ME1105.1.	identify stress and strain present in a mechanical system.

- ME1105.2. analyze and evaluate 1-D and 2-D stress tensor in a specimen.
- ME1105.3. analyze shear force and bending moment diagrams for a beam under different loading conditions.
- ME1105.4. design shafts against torsion load for different application.
- ME1105.5. design columns against buckling load for various end conditions.

Course						Correla	ation w	ith prog	gram ou	tcomes	5					Correl	Correlation with	
Outcome																pro	program	
																sp	ecific	
																outcomes		
	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO <td>PSO-</td> <td>PSO-2</td>													PSO-	PSO-2			
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1		
ME1105.1			1		1	1										1		
ME1105.2			1		2	1												
ME1105.3	1		1		1	1												
ME1105.4			1		1													
ME1105.5	1		1		1											1	1	
Average	0.40	0.00	1.00	0.00	1.20	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.20	

### Course Name: Computational Engineering Analysis – II

ES1109.1.	Classify various types of partial differential equations and solve them through
	various analytical and numerical methods.

- ES1109.2. Formulate and analyze differential equations especially Navier stokes and energy equations and use numerical methods for solving the same.
- ES1109.3. Use Numerical method for solving partial differential equations using finite difference method.
- ES1109.4. Find Fourier and inverse Fourier transforms of given function and use Fourier transform to solve partial differential equations.
- ES1109.5. Find Z-transform and inverse Z-transforms of given functions and use them to analyze control systems.
- ES1109.6. Design and analyse various types of filters and attenuators to minimize power losses and improve signal quality.
- ES1109.7. Solve problems involving vertex and edge connectivity, planarity and crossing numbers.

	r																	
Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation	
Outcome																with program		
																	specific	
																outcomes		
																outcomes		
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-	
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2	
ES1109.1	1				1	1		1			1							
ES1109.2	2		2		2	2	1	2			1		1	2				
ES1109.3						1	2											
ES1109.4					2	2		1			1							
ES1109.5	1		1		2	2		1			1			1				
ES1109.6		1				1	2			2				1				
ES1109.7						1	2	2						1				
Average	0.57	0.14	0.43	0.00	1.00	1.43	1.00	1.00	0.00	0.29	0.57	0.00	0.14	0.71	0.00	0.00	0.00	

Course Code	: ME1106
Course Name	: Production Technology - I

- ME1106.1. Design molding system to obtain defect free cast.
- ME1106.2. Analyze various welding processes for different applications.
- ME1106.3. Identify non-conventional manufacturing process to manufacture intricate shaped product accurately.
- ME1106.4. Identify latest manufacturing systems and processes for manufacturing of components.

Course						Correla	ation w	ith prog	gram ou	tcomes						Correlation with		
Outcome																pro	program	
																sp	ecific	
																	comes	
	PO P														PSO-	PSO-2		
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1		
ME1106.1	1				1	1	1	1	1	1	1	1		1	1	1	2	
ME1106.2	1					1	1	1	1	1		1				1	2	
ME1106.3											1	1					1	
ME1106.4	1				1	1	1										1	
Average	0.75	0.00	0.00	0.00	0.50	0.75	0.75	0.50	0.50	0.50	0.50	0.75	0.00	0.25	0.25	0.50	1.50	

# Course Code: CC1104

# Course Name: Communication and Identity

- CC1104.1. Analyse their personal identities, both private and social
- CC1104.2. Identify their different values, strengths and areas of professional interest
- CC1104.3. Articulate their personal statement and use it to craft an influential pitch
- CC1104.4. Express themselves through various communication formats on different platforms

Course						Correla	ation w	ith prog	gram ou	tcomes						Correlation	
Outcome																with program	
																specific	
																outcomes	
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1104.1													1	1			
CC1104.2	1		2	1										2			
CC1104.3													1				
CC1104.4													2				
Average	0.25	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.00

# Course Code: IL1102

### Course Name: Introduction to Design

- IL1102.1. Identify the user and build persona of the
- IL1102.2. Sketch their ideas on paper to visualize and assess viability.
- IL1102.3. Create a plan for process and management to materialize the desired idea.
- IL1102.4. Test the material for possibilities and capabilities.
- IL1102.5. Develop skills of joinery, material manipulation and various hand tools.
- IL1102.6. Develop technical and narrative skills useful for both film and animation.
- IL1102.7. Develop troubleshooting and problem-solving skills.

Course						Correl	ation w	ith prog	gram ou	tcomes						Correlation	
Outcome																with program	
																specific	
																outcomes	
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
IL1102.1	1								1	1			1	1			
IL1102.2	2						1						2				
IL1102.3	1						1	1						2			
IL1102.4	1						1	1									
IL1102.5							1	1									
IL1102.6	2						1						1				
IL1102.7	1		1			1	1										
Average	1.14	0.00	0.14	0.00	0.00	0.14	0.86	0.43	0.14	0.14	0.00	0.00	0.57	0.43	0.00	0.00	0.00
Course Code	: ME1107																
---------------	---------------------------------------------------------------------------------																
Course Name	: Mechanical Engineering CAD Lab																
Course Outcor	<b>nes</b> : After course completion, the student will be able to																
ME1107.1.	identify surface roughness number and symbol, symbols of machine elements and																
	welded joints limit.																
ME1107.2.	assess limits, fits and tolerance for machine elements in engineering drawings.																
ME1107.3.	develop geometrical models for different machine components.																
ME1107.4.	develop assembly and detailed drawings of engine parts.																

Course		Correlation with program outcomes													Correl	ation with	
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ME1107.1																	1
ME1107.2									1							1	
ME1107.3									1		1						
ME1107.4							1		1		1		1				1
Average	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.75	0.00	0.50	0.00	0.25	0.00	0.00	0.25	0.50

Course Code	: ME1108
Course Name	: Theory of Machines

:

### Course Outcomes

ME1108.1. Compare and develop various application based linkages and mechanismsME1108.2.Analyze velocity and acceleration polygon of different types of mechanisms.ME1108.3.Analyze the cam and follower mechanism in order to optimize the power consumption.

ME1108.4.Prioritize among various mechanisms like belt, rope and chain drive systems in order to minimize energy consumption.

Course	Correlation with program outcomes													Correl	ation with		
Outcome																pro	ogram
																sp	ecific
																out	comes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ME1108.1	1				1	1	1				1	1		1		2	2
ME1108.2	1				1	1	1		2			1		1		2	2
ME1108.3	1				1	1	1	1	1					1		2	2
ME1108.4	1				1	1	1	1	1		1	1		1	2	2	1
Average	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.50	1.00	0.00	0.50	0.75	0.00	1.00	0.50	2.00	1.75

<b>Course Code</b>	: ME1109
<b>Course Name</b>	: PRODUCTION TECHNOLOGY - II
<b>Course Outcom</b>	<b>mes</b> : After course completion, the student will be able to
ME1109.1.	Design load capacity of forming equipment to perform various bulk forming and
	sheet forming operations.
ME1109.2.	Design of machining tools, forming tools and holding tools for various forming
	and machining processes.
ME1109.3.	Calculate force required for machining metallic materials using appropriate cutting
	tool materials and cutting fluids.
ME1109.4.	Use cutting, milling, and finishing operations to shape materials and evaluate their

ME1109.4. Use cutting, milling, and finishing operations to shape materials and evaluate their surface finish using conventional and automatic machines.

Course	Correlation with program outcomes														Correl	ation with	
Outcome																pro	ogram
																sp	ecific
														out	comes		
	РО	PO	РО	PO	РО	РО	PO	РО	PO	PSO-	PSO-2						
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ME1109.1	1				2	1	1	1	1	1				1	1	2	2
ME1109.2					1	1	1	1	1	1				1		2	2
ME1109.3	1				2	1	1	1	1	1				1	1	2	1
ME1109.4					1	1	1	1	1	1				1		2	1
Average	0.50	0.00	0.00	0.00	1.50	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	0.50	2.00	1.50

## Course Code: CC1105

# Course Name: Understanding and Managing Conflict

Course Outcomes: After course completion, the student will be able to

- CC1105.1. Define a group and explain the stages of group development
- CC1105.2. Describe conflict and explain types and causes of conflict
- CC1105.3. Use inquiry and advocacy to engage with groups
- CC1105.4. Give and receive feedback effectively
- CC1105.5. Identify sources of conflict and manage them using difference conflict handling styles

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	РО	РО	РО	РО	РО	РО	РО	РО	PO	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
CC1105.1	1										2		1				
CC1105.2	1							1									
CC1105.3	1		1						1		2	1	1				
CC1105.4	1										1		1				
CC1105.5	1										1	1	1				
Average	1.00	0.00	0.20	0.00	0.00	0.00	0.00	0.20	0.20	0.00	1.20	0.40	0.80	0.00	0.00	0.00	0.00

Course Code: EE1111

Course Name: Introduction to IoT

Course Outcomes: On successful completion of this course, the students should be able to

- EE1111.1. Interface the Analog and Digital sensors to Node-MCU
- EE1111.2. Develop Embedded C programs to read sensor data and upload to public cloud platform.
- EE1111.3. Use Python-based IDE (integrated development environments) for the Raspberry Pi
- EE1111.4. Interface Raspberry Pi with I/O devices.
- EE1111.5. Visualize sensor data uploaded on public cloud.
- EE1111.6. Apply standard protocol(s) for implementation of IoT Systems.
- EE1111.7. Analyze and Improve existing systems with innovative IoT based approaches.

Course						Correla	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with pr	rogram
																spea	cific
																outc	omes
	РО	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
EE1111.1								1		1	1						
EE1111.2							1	1	1		1						
EE1111.3								1		1							
EE1111.4								1	1	1	1		1	1			
EE1111.5							1	1		1	1			1			
EE1111.6									1	1			1	1			
EE1111.7									1	1	1						
Average	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.71	0.57	0.86	0.71	0.00	0.29	0.43	0.00	0.00	0.00

## Course Code: PR1101

Course Name: Automation Project

Course Outcomes: On successful completion of this course, the students should be able to

- PR1101.1. Design and implement a complete project in IoT/Automation using microcontroller/SOC interfaced with sensors or any other automation hardware/tools.
- PR1101.2. Apply anyone/more standard data communication/IoT protocol(s).
- PR1101.3. Use cloud servers for data streaming/logging and analytic techniques.
- PR1101.4. Implement algorithms/signal processing using the data at edge/cloud.
- PR1101.5. Deploy techniques to conserve bandwidth/energy/other resources and achieve cost economy for project.

Course						Correl	ation w	ith prog	gram ou	tcomes						Corre	lation
Outcome																with p	rogram
																spee	cific
																outc	omes
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PSO-	PSO-
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	2
PR1101.1	2				2					2		2		3			
PR1101.2						2											
PR1101.3							2										
PR1101.4	2								2								
PR1101.5					2		2										
Average	0.80	0.00	0.00	0.00	0.80	0.40	0.80	0.00	0.40	0.40	0.00	0.40	0.00	0.60	0.00	0.00	0.00

<b>Course Code</b>	: ME1110
Course Name	: Design of Machine Elements- ME1110
<b>Course Outco</b>	• After course completion, the student will be able to
ME1110.1.	Design and evaluate shafts to work under different service loading conditions as
	per ASTM/BIS standards.

- ME1110.2. Design bearings for various applications as per ASTM/BIS standards.
- ME1110.3. Design, evaluate gears for various applications as per ASTM/BIS standards.
- ME1110.4. Design springs for various systems as per ASTM/BIS standards.

Course						Correla	ation w	ith prog	gram ou	tcomes	;					Correl	ation with
Outcome																program	
																sp	ecific
																out	comes
	PO	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	PO	PO	PO	PSO-	PSO-2
	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	6	7a	7b	1	
ME1110.1	1	1			1	1	1	1						1		2	2
ME1110.2			1	1	1	1	1	1						1		2	2
ME1110.3	1			1	1	1	1	1	1					1	1	2	2
ME1110.4	1			1	1	1	1	1	1					1	1	2	2
Average	0.75	0.25	0.25	0.75	1.00	1.00	1.00	1.00	0.50	0.00	0.00	0.00	0.00	1.00	0.50	2.00	2.00

<b>Course Code</b>	: ME1111
Course Name	: Automobile Engineering
<b>Course Outcomes</b>	: After course completion, the student will be able to
ME1111.1. Identi	ify different part of the automobile.
ME1111.2. Design	n and explain the working of various parts like engine, transmission, clutch
and br	akes.

- ME1111.3. Design a steering and suspension system.
- ME1111.4. Identify Euro6 standards for automobile emissions.

Course						Correla	tion wi	ith prog	gram ou	tcomes						Correl	ation with
Outcome																pro	ogram
																sp	ecific
																out	comes
	PO	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															PSO-2
	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															
ME1111.1	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															2
ME1111.2	1	1	1	1	1	1					1			1	1	2	2
ME1111.3	1	1	1	1	1									1	1	2	2
ME1111.4	1	1		1	1		1							1	1	2	2
Average	1.00	0.75	0.75	1.00	1.00	0.50	0.50	0.00	0.00	0.00	0.50	0.00	0.00	1.00	1.00	2.00	2.00

Course Code: CC1106

Course Name: Critical Thinking for Decisions at Workplace

Course Outcomes: After course completion, the student will be able to

- CC1106.1. Apply techniques of Critical Thinking to analyse organizational problems through positive inquiry
- CC1106.2. Describe and analyse appropriate problem-solving and ethical decision-making processes
- CC1106.3. Choose the most effective and logical decision among multiple alternatives
- CC1106.4. Evaluate solutions and anticipate likely risks based on purpose, context and ethics

Course						Correl	ation w	ith proc	tram OI	teomes						Corre	lation
Course						Concia	ation w	iui piog	grann Ou	comes						Conc	lation
Outcome																with p	rogram
																spee	cific
																outco	omes
	PO	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO <th>PSO-</th>															PSO-
	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															2
CC1106.1	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															
CC1106.2	2					1		2					1				
CC1106.3									1		1	2	1				
CC1106.4							1	2				2					
Average	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00

Course Code	PO1	PO2a	PO2b	PO2c	PO3a	PO3b	PO3c	PO4a	PO4b	PO4c	PO5a	PO5b	PO6	PO7a	PO7b	PSO1	PSO2	PSO3	PSO4
AS2101	1.25	0.50	0.25	0.00	1.75	0.00	0.75	0.75	0.00	1.50	0.00	0.00	0.75	0.00	0.00	0.00	1.75	0.00	0.25
EE2101	0.60	0.00	0.00	0.00	1.20	0.00	1.80	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	1.20	2.00
ME2101	1.00	1.00	0.83	0.33	0.33	0.83	0.50	0.33	1.67	0.50	0.67	0.50	0.50	0.83	0.83	1.33	1.17	1.33	0.83
PR2101	1.20	0.20	0.40	0.00	1.20	0.40	0.20	0.00	0.00	0.60	1.00	0.00	0.40	0.20	0.00	0.20	1.00	0.80	1.80
IL1101	1.50	0.50	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.50	0.00	0.00	0.00	0.00	0.00	0.00
CE2201	1.60	0.80	0.80	0.00	0.00	0.40	0.60	0.00	0.00	1.00	0.40	1.00	0.60	1.00	0.00	1.00	1.00	1.40	1.20
CS2107	0.00	0.00	0.40	0.00	0.40	0.40	0.60	0.40	0.60	1.20	0.40	0.40	0.40	0.40	0.00	0.00	1.00	1.00	0.60
IL2103A	0.67	0.33	0.67	0.00	0.50	0.83	0.67	1.00	2.00	0.83	0.50	0.67	0.33	0.33	0.00	0.33	1.17	0.83	1.50
IL2104	1.00	0.67	0.67	0.50	0.33	0.83	0.50	0.33	0.50	0.33	0.50	0.67	0.17	0.17	0.17	2.17	0.50	1.50	0.67
PR2102	1.20	0.20	0.40	0.00	1.20	0.40	0.20	0.00	0.00	0.60	1.00	0.00	0.40	0.20	0.00	0.20	1.00	0.80	1.20
CC1106	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
IL2201	1.43	0.00	0.57	0.14	0.00	0.14	0.14	0.00	0.00	0.14	0.43	0.14	0.14	0.14	0.00	0.14	1.71	0.43	1.14
CE2202A	1.33	0.33	0.00	0.33	0.00	0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00	1.00	0.00	0.83	0.50	0.33	0.33
ME2201	0.71	0.00	0.57	0.71	0.29	0.29	0.00	0.00	0.71	0.00	0.29	0.00	0.00	0.00	0.00	0.71	1.00	2.00	0.86
ME2202	1.50	0.33	0.67	0.50	1.67	0.67	0.00	0.33	0.83	0.67	0.00	0.33	0.00	0.00	0.00	0.50	1.17	1.17	0.83
IL2202	1.20	1.60	1.00	0.40	0.00	0.00	0.80	0.00	0.00	0.40	0.40	0.40	0.00	0.00	0.00	1.20	0.20	1.20	1.40
PR2104	1.20	1.00	0.80	1.60	2.60	1.40	0.80	0.60	0.00	0.00	2.60	0.60	1.00	1.40	1.00	0.80	0.40	0.80	1.40
PR2107	1.20	1.00	0.80	1.60	2.60	1.40	0.80	0.60	0.00	0.00	2.40	0.60	1.00	1.00	1.00	0.80	0.40	0.80	1.60
Total*	19.34	8.47	9.08	6.37	14.57	8.25	8.61	5.85	6.56	7.78	14.23	7.06	7.19	6.68	3.00	10.22	13.96	15.60	17.62
Program Articulation	С	AB	AB	AB	С	AB	AB	AB	AB	AB	С	AB	AB	AB	Ν	С	С	С	С
Expectation	С	AB	AB	AB	С	AB	AB	AB	AB	AB	С	AB	AB	AB	Ν	С	С	С	С

# **Description of levels of Program Articulation:**

Novice (N) (Low)	<ul> <li>Knows objective facts, features, and rules for determining actions with respect to this PO/PSO without being context sensitive.</li> <li>Has studied the basic concepts.</li> </ul>
Advanced beginner (AB) (Moderate)	<ul> <li>Recognizes common situations with respect to this PO/PSO that help in recalling which rules should be exercised, starts to recognize and handle situations not covered by given facts, features and rules.</li> <li>Has problem solving and repeated practice experience for common situations with respect to this PO/PSO.</li> </ul>
Competent (C) (High)	<ul> <li>Performs most standard actions with respect to this PO/PSO without conscious application of rules after considering the whole situation.</li> <li>Handles new situations through the appropriate application of rules, can design systems.</li> <li>May lead.</li> <li>Has demonstrated this PO/PSO through repeated engagements in advanced problem solving, projects, extensive practice in common and exception situations, and participated in professional networks.</li> </ul>

# **Rules for the Computation of Program Articulation:**

Novice (N) (Low)	Total* < 5
Advanced beginner (AB) (Moderate)	$5 \leq \text{Total}^* < 10$
Competent (C) (High)	$Total* \ge 10$

	M. Tech (HSEE) (Batch: 2019-2021)	
Course Code	Course Name	Page No
AS2101	Statistical Data Analysis	4
EE2101	Industrial Automation and Internet of Things-I	5
ME2101	Industrial Safety Management	6
PR2101	Project-I	7
IL1101	Management Perspectives	8
CE2201	Industrial Waste Management	9
CS2107	Computer Aided Risk Analysis	10
IL2103A	Risk and Hazard Management	11
IL2104	Regulation for Health, Safety, and Environment Management	12
PR2102	Project-II	13
CC1106	Critical Thinking for Decisions at Workplace	14
IL2201	Occupational Hygiene and Health	15
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IL2202	Environmental Impact Assessment and Environmental Auditing	19
PR2104	Industrial Project –I	20
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Course Code: AS2101

Course Name: Statistical Data Analysis

Course Outcomes: At the end of the course, students will be able to

[AS2101.1]. Frame real world analysis problems using statistical concepts and solve those using standard techniques.

[AS2101.2]. Use professional level tools to support the study of statistics.

[AS2101.3]. Communicate quantitative ideas to a range of audiences.

[AS2101.4]. Apply recommended practices for data analysis.

Course Outcome				C	ORRE	LATIO	N WII	TH PRO	OGRAN	M OUT	COME	ES				COR WITH SPEC	RELA' H PRO CIFIC COME	ΓΙΟΝ GRAM S	[
	PO	PO 2a	PO 2h	PO 2a	PO 2	PO 2h	PO 2	PO	PO 4h	PO	PO 5	PO	PO	PO 7	PO 7h	PS	PS	PS	PS
	1	2a 2b 2c 3a 3b 3c 4a 4b 4c 5a 5b 6 7a															02	03	04
AS2101.1	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															3		
AS2101.2	2		1		1		3	1		2							1		
AS2101.3		1			1								3						
AS2101.4	2				3					2							3		1
Average	1.25	0.50	0.25	0.00	1.75	0.00	0.75	0.75	0.00	1.50	0.00	0.00	0.75	0.00	0.00	0.00	1.75	0.00	0.25

Course Code: EE2101

Course Name: Industrial Automation and Internet of Things-I

Course Outcomes: At the end of the course, students will be able to

[EE2101.1]. Analyse the link between Information Technology and Operational Technology.

[EE2101.2]. Explain the key components that make up an Industrial automation & IoT system.

[EE2101.3]. Discuss protocols and standards employed at each layer of the Industrial automation & IoT stack.

Choose technology for communication and real-time data collection.

[EE2101.4]. Design, deploy and test a basic Industrial automation & IoT system.

[EE2101.5]. Apply recommended engineering practices to meet desired requirements for applications. Consider sustainability and cybersecurity as design constraints.

Course Outcome			-	COR	RELA	TION	WIT	H PRO	DGRA	M OU	JTCO	MES				COR WIT SPEC	RELA H P CIFIC COM	ATIOI ROGI ES	N RAM
	РО 1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															PS O 2	PS O 3	PS O 4
EE2101.1	1	2a       2b       2c       3a       3b       3c       4a       4b       4c       5a       5b       6       7a         Image: Constraint of the state of																	2
EE2101.2	1				2		3				2								2
EE2101.3	1						3				2								2
EE2101.4					2													3	2
EE2101.5					2						2							3	2
Average	0.60	0.00	0.00	0.00	1.20	0.00	1.80	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.00	1.20	2.00

Course Code: ME2101

Course Name: Industrial Safety Management

Course Outcomes: At the end of the course, students will be able to

[ME2101.1]. Analyse the effect of the release of toxic substances.

[ME2101.2]. Explain the industrial laws, regulations and source models.

[ME2101.3]. Apply the methods of prevention of fire and explosions.

[ME2101.4]. Identified the relief and its sizing methods.

[ME2101.5]. Explain the methods of hazard identification and preventive measures.

[ME2101.6]. Apply standard safety procedures in an industrial environment.

Course Outcome				C	ORREI	LATIO	N WIT	Ή PRC	OGRAI	MOUT	ΓCOM	ES				COR WIT SPEC	RELA' H PRO CIFIC COME	TION GRAM ES	1
	PO	PO 2aPO 2bPO 2cPO 3aPO 3bPO 3cPO 4aPO 4bPO 4cPO 5aPO FO 5bPO 6PO FO 7a															PSO	PS	PS
	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															2	03	04
ME2101.1	1         2         2         2         1         3         2         2														1		3	2	2
ME2101.2	2	2		1					1							3			
ME2101.3	1									3				1	2	2		3	
ME2101.4						1		1	2		2	3		1	1	3	2		
ME2101.5	2			1			2		2				3					3	
ME2101.6		2	3			2	1		2		2			1	1		2		3
Average	1.00	1.00	0.83	0.33	0.33	0.83	0.50	0.33	1.67	0.50	0.67	0.50	0.50	0.83	0.83	1.33	1.17	1.33	0.83

Course Code: PR2101

Course Name: Project-I

Course Outcomes: At the end of the course, students will be able to

[PR2101.1]. identify and understand the various types of solids wastes and their sources.

[PR2101.2]. determine the important parameter for preparation of organic compost from solid wastes.

[PR2101.3]. determine the impact of different parameter on C: N ratio of organic compost.

[PR2101.4]. design and carry out scientific study of bio-digester for methane gas production from food waste.

[PR2101.5]. learn field sampling, analytical techniques and preservation of samples.

Course Outcome	COR	RELA	TION	WITH	PROG	RAM (	OUTC	OMES								COR WITH SPEC	RELA H PRO CIFIC COME	ΓΙΟΝ GRAM S	I
	PO 1	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO<														PS O 1	PS O 2	PS O 3	PS O 4
PR2101.1	2		1		2						2		1				2	2	2
PR2101.2	1		1			1				1	2		1			1	2		2
PR2101.3	1				2		1										1		1
PR2101.4	1	1			2	1				2				1				2	2
PR2101.5	1										1								2
Average	1.20	0.20	0.40	0.00	1.20	0.40	0.20	0.00	0.00	0.60	1.00	0.00	0.40	0.20	0.00	0.20	1.00	0.80	1.80

Course Code: IL1101

Course Name: Management Perspectives

Course Outcomes: At the end of the course, students will be able to

[IL1101.1]. Comprehend the importance of management and its functional areas in businesses and also its interaction with technology.

[IL1101.2]. Highlight specific external and internal issues impacting businesses.

[IL1101.3]. Integrate and analyze multiple dimensions of management aspects to solve business problems.

[IL1101.4]. Evaluate the aspects that management might consider when evaluating technical and engineering projects such as planning and scheduling, personnel management, cost control etc. from a management perspective.

Course Outcome				СО	RREL	ATION	I WITH	H PRO	GRAM	I OUT(	COME	S				COR WITI SPEC OUT	RELA' H PRO CIFIC COME	TION GRAM ES	1
	PO 1	PO 2aPO 2bPO 2cPO 3aPO 3bPO 3cPO 4aPO 4bPO 4cPO 5aPO 5bPO 6PO 7a															PS O 2	PS O 3	PS O 4
IL1101.1	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$																	
IL1101.2	1	2											1						
IL1101.3	2		1		1						2		1						
IL1101.4	2			1							2	3							
Average	1.50	0.50	0.25	0.25	0.50	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.50	0.00	0.00	0.00	0.00	0.00	0.00

Course Code: CE2201

Course Name: Industrial Waste Management

Course Outcomes: At the end of the course, students will be able to

[CE2201.1]. Analyze key sources, typical quantities generated, composition, and properties of solid and hazardous wastes.

[CE2201.2]. Compare effective methods of solid & hazardous wastes handling and segregation of wastes at source.

[CE2201.3]. Test the most common techniques for preventing, minimizing, recycling, disposing and treatment of waste and their application on-site remediation.

[CE2201.4]. Recognize the relevant regulations that apply for facilities used for disposal, and destruction of waste.

[CE2201.5]. identify, formulate, and solve engineering problems, and an understanding of professional and ethical responsibility

Course Outcome				COR	RELAT	FION V	WITH I	PROGI	RAM C	OUTCC	OMES				COR PRO OUT	RELAT GRAM COME	ΓΙΟΝ V SPEC S	WITH IFIC	
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	PS	PS	PS	PS
	1	2a	2b	2c	3a	7a	7b	01	02	03	04								
CE2201.1	2	2										2		2			3		2
CE2201.2	2	2					2			1	1	2				1	2		2
CE2201.3	2		2				1			2		1		1		1		2	2
CE2201.4			1										1			3		2	
CE2201.5	2		1			2				2	1		2	2				3	
Average	1.60	0.80	0.80	0.00	0.00	0.40	0.60	0.00	0.00	1.00	0.40	1.00	0.60	1.00	0.00	1.00	1.00	1.40	1.20

Course Code: CS2107

Course Name: Computer-Aided Risk Analysis

Course Outcomes: At the end of the course, students will be able to

[CS2107.1]. identify the attributes to reduce identified risks

[CS2107.2]. get insight in how to perform risk analysis.

[CS2107.3]. get insight in computer models for estimating risk

[CS2107.4]. handle a case study with a risk analysis.

[CS2107.5]. effectively use existing risk analysis tools to solve real life problems of industry

Course Outcome				C	ORREI	LATIO	N WIT	TH PRO	DGRA	MOU	ГСОМ	ES				CORI PROC OUTO	RELAT GRAM COMES	'ION W SPECII S	TTH FIC
	РО 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PSO 1	PSO 2	PSO 3	PSO 4
CS2107.1		2a       2b       2c       3a       3b       3c       4a       4b       4c       5a       5b       6       7a       7b       1       2       3       4         Image: Second structure       Image: Second structure																	
CS2107.2		2     3       2     3																	
CS2107.3						2	3											2	
CS2107.4									3	3	2		2				2		
CS2107.5			2									2		2					3
Average	0.00	0.00	0.40	0.00	0.40	0.40	0.60	0.40	0.60	1.20	0.40	0.40	0.40	0.40	0.00	0.00	1.00	1.00	0.60

Course Code: IL2103A

Course Name: Risk and Hazard Management

Course Outcomes: At the end of the course, students will be able to

[IL2103A.1]. Identify hazards in chemical and petrochemical workplace activities using hazard identification techniques and hazard assessment process.

[IL2103A.2]. Plan preventive actions needed to minimize hazards in chemical and petrochemical workplace activities.

[IL2103A.3]. Assess health risks at different workplaces by integrating relevant data from a variety of sources.

[IL2103A.4]. Take appropriate corrective action in emergency situations, i.e., fire, explosion, and accident. [IL2103A.5]. Assess risk and vulnerability for the electrical system considering both natural and manmade failures.

[IL2103A.6]. Plan restoration stages for integrated power systems considering multiple contingencies.

Course Outcome				CO	ORREI	LATIO	N WIT	TH PRO	OGRA	MOU	ГСОМ	ES				CORI PROC OUTC	RELAT GRAM COMES	TON W SPECII S	TTH FIC
	PO 1	PO       PO <th< td=""><td>PSO 4</td></th<>															PSO 4		
IL2103A.1	2	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															2		
IL2103A.2	2		2		2	2			2									3	2
IL2103A.3							2	2	2	2							2		
IL2103A.4									3	3									3
IL2103A.5								2				2					3		
IL2103A.6									2		3					2			2
Average	0.67	0.33	0.67	0.00	0.50	0.83	0.67	1.00	2.00	0.83	0.50	0.67	0.33	0.33	0.00	0.33	1.17	0.83	1.50

Course Code: IL2104

Course Name: Regulation for Health, Safety, and Environment Management

Course Outcomes: At the end of the course, students will be able to

[IL2104.1]. Explain the Guidelines of major occupational health safety (OHS) legislation and various Act.

[IL2104.2]. Implement appropriate OHS legislation at different workplaces.

[IL2104.3]. Prepare a work safety analysis, applying the concepts of danger, hazard and preventive measures in any activity at different workplaces.

[IL2104.4]. Design Safety and Occupational Health Plans for different projects according to the OHSA 18001standard and the current laws.

[IL2104.5]. Assess workplace conditions against relevant standards and regulations.

[IL2104.6]. Evaluate and deploy appropriate control systems for air, noise and heat pollutants.

Course Outcome				C	ORREI	.ATIO	N WIT	Ή PRO	OGRA	MOUT	ГСОМ	ES				CORI PROC OUTC	RELAT GRAM COMES	'ION W SPECII S	ITH FIC
	PO	PO 2a	PO	PO 2	PO 2a	PO 2h	PO 2	PO	PO	PO	PO 5	PO	PO	PO 7	PO 7h	PSO	PSO	PSO 2	PSO
	1     2a     2b     2c     3a     3b     3c     4a     4b     4c     5a     5b     6     7a     7b       1     2     2     1     1     1     1     1     1															1	2	3	4
IL2104.1	1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$															2	2	
IL2104.2						3										3		2	
IL2104.3	2				2	2	3	2				2		1		3		3	
IL2104.4	2			2					2		1					2			2
IL2104.5	1	2									2	2					3		
IL2104.6			2							2					1	2		2	
Average	1.00	0.67	0.67	0.50	0.33	0.83	0.50	0.33	0.50	0.33	0.50	0.67	0.17	0.17	0.17	2.17	0.50	1.50	0.67

Course Code: PR2102

Course Name: Project-II

Course Outcomes: At the end of the course, students will be able to

[PR2102.1]. Identify and assess the major air pollutants

[PR2102.2]. Monitor the major ambient air quality parameters.

[PR2102.3]. Analyze the key water pollutant in domestic as well as industrial wastewater discharge.

[PR2102.4]. Test the different chemical, physical and biological parameters of waste water.

[PR2102.5]. Interpret, compare the data of air and water quality parameters for better impact mitigation.

Course Outcome	COR	RELA'	TION '	WITH	PROG	RAM	OUTC	OMES								COR WIT SPEC OUT	RELA H PRO CIFIC COME	TION OGRAM ES	1
	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PS O 1	PS O 2	PS O 3	PS O 4
PR2102.1	2		1		2						2		1				2	2	2
PR2102.2	1		1			1				1	2		1			1	2		
PR2102.3	1				2		1										1		
PR2102.4	1	1			2	1				2				1				2	2
PR2102.5	1										1								2
Average	1.20	0.20	0.40	0.00	1.20	0.40	0.20	0.00	0.00	0.60	1.00	0.00	0.40	0.20	0.00	0.20	1.00	0.80	1.20

Course Code: CC1106

Course Name: Critical Thinking for Decisions at Workplace

Course Outcomes: At the end of the course, students will be able to

[CC1106.1]. Apply techniques of critical thinking to analyse organisational problems through positive inquiry

[CC1106.2]. Describe and analyse appropriate problem-solving and ethical decision-making processes

[CC1106.3]. Choose the most effective and logical decision among multiple alternatives

[CC1106.4]. Evaluate solutions and anticipate likely risks based on purpose, context and ethics

Course Outcome				CO	ORREI	.ATIO	N WIT	'H PRO	OGRAI	M OUT	COM	ES				COR WITI SPEC OUT	RELA' H PRO CIFIC COME	TION GRAM S	1
	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPSPSPSPS12a2b2c3a3b3c4a4b4c5a5b67a7bO1O2O3														PS O 3	PS O 4			
CC1106.1	1										2		2						
CC1106.2	2					1		2					1						
CC1106.3									1		1	2	1						
CC1106.4							1	2				2							
Average	0.75	0.00	0.00	0.00	0.00	0.25	0.25	1.00	0.25	0.00	0.75	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00

Course Code: IL2201

Course Name: Occupational Hygiene and Health

Course Outcomes: At the end of the course, students will be able to

[IL2201.1]. Identify the health hazard and the importance of occupational hygiene.

[IL2201.2]. Explain the role of the occupational hygienist in the workplace.

[IL2201.3]. Apply the Hazard recognition techniques and use Methods of controlling exposure.

[IL2201.4]. Identify Ergonomic & psychosocial Hazards in the workplace.

[IL2201.5]. Apply the basic principles for measurement, control, and evaluation of occupational hygiene.

[IL2201.6]. Interpret data and apply recommendations of occupational hygiene reports.

[IL2201.7]. Characterize the common hazards in a wide range of production processes found in India.

Course Outcome				CO	ORREI	.ATIO	N WIT	'H PRO	OGRAI	M OUT	ГСОМ	ES				COR PRO OUT	RELA' GRAM COME	TION ' I SPEC ES	WITH XIFIC
	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPSPSPSPSPS12a2b2C3a3b3c4a4b4c5a5b67a7bO1O2O3O														PS O 4				
IL2201.1	1		1									1	1				2		1
IL2201.2	1										2						2		
IL2201.3	2		1			1											3		2
IL2201.4	2						1			1				1			2	1	2
IL2201.5	2		2																2
IL2201.6	1			1							1						3	2	1
IL2201.7	1															1			
Average	1.43	0.00	0.57	0.14	0.00	0.14	0.14	0.00	0.00	0.14	0.43	0.14	0.14	0.14	0.00	0.14	1.71	0.43	1.14

#### Course Code: CE2202A

Course Name: Safety in Construction

Course Outcomes: At the end of the course, students will be able to

[CE2202A.1]. Define the key safety requirements in construction Industries [CE2202A.2]. Identify the hazards and risks involved in construction industries [CE2202A.3]. Implement the Effective Safety Management System [CE2202A.4]. Reduce of workplace injuries through incident prevention methods [CE2202A.5]. Improve safety culture within the organization [CE2202A.6]. Apply Indian Standards for safety in Construction site

Course Outcome				(	CORRI	ELATI	ON W	ITH PI	ROGRA	AM OU	JTCON	MES				CO W SH O	ORREL ITH PR PECIFIC UTCON	ATION ROGRA C MES	J M
	PO	DPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO															PSO	PSO	PSO
	1	OPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO															2	3	4
CE2202A.1	2	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO <td></td> <td></td> <td></td>																	
CE2202A.2	2													1		2	3		
CE2202A.3	1							3			3			3				2	
CE2202A.4																			
CE2202A.5	1	2												2					2
CE2202A.6	2			2												3			
Average	1.33	0.33	0.00	0.33	0.00	0.00	0.00	0.50	0.00	0.00	0.50	0.00	0.00	1.00	0.00	0.83	0.50	0.33	0.33

Course Code: ME2201

Course Name: Fire Engineering and Management

Course Outcomes: At the end of the course, students will be able to

[ME2201.1]. Distinguish between a portable fire extinguisher and fixed fire extinguisher systems.

[ME2201.2]. List different types of fire brigades and the Occupational, Safety, and Health Administration (OSHA) requirements.

[ME2201.3]. Describe the number system used by the United Nations and Department of Transportation (DOT) in classifying hazardous materials.

[ME2201.4]. Describe the Life Safety Code requirements that are located in the model building codes that are used throughout the world.

[ME2201.5]. Determine factors necessary when selecting an appropriate fire detection system.

[ME2201.6]. Prepare, review, and/or approve all applicable safe-practice standards.

[ME2201.7]. Explain that all legislation is aimed at protecting life, society, and property.

Course				COF	RELA	ATIO	N WIT	'H PR	OGRA	VN OI	JTCO	MES				COR WIT SPEC	RELA H PRO CIFIC COM	ATION DGRAI ES	М
outcome	PO 1	POPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPOPO <td>PSO 4</td>															PSO 4		
ME2201.1	3															2		3	
ME2201.2			2															2	2
ME2201.3				1	2												3		
ME2201.4			2						1									2	
ME2201.5									2								2	3	
ME2201.6				2		2					2						2	2	2
ME2201.7	2			2					2							3		2	2
Average	0.71	0.00	0.57	0.71	0.29	0.29	0.00	0.00	0.71	0.00	0.29	0.00	0.00	0.00	0.00	0.71	1.00	2.00	0.86

Course Code: ME2202

Course Name: Chemical Safety

Course Outcomes: At the end of the course, students will be able to

[ME2202.1]. Assess the severity of the consequences of incidents.

[ME2202.2]. Identify the hazard by different techniques in a chemical processing plant.

[ME2202.3]. Assess the level of risk for different kind of hazards in a chemical processing plant.

[ME2202.4]. Explain the legal framework controlling process plant safety in India.

[ME2202.5]. Analyze the root cause of accidents in chemical industry.

[ME2202.6]. Evaluate the onsite and offsite emergency plan for chemical spill or fire.

Course				C	ORREI	LATIO	N WIT	TH PRO	OGRAI	M OUI	COMI	ES				COR PRO OUT	RELA' GRAM COME	FION V SPEC S	WITH IFIC
Outcome	PO 1	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 4a	PO 4b	PO 4c	PO 5a	PO 5b	PO 6	PO 7a	PO 7b	PS O 1	PS O 2	PS O 3	PSO 4
ME2202.1	2				2													2	2
ME2202.2					3	2		2	2								2		
ME2202.3	2				2				3								3		
ME2202.4	2	2	2	3	1							2				3			
ME2202.5			2							2							2	3	
ME2202.6	3				2	2				2								2	3
Average	1.50	0.33	0.67	0.50	1.67	0.67	0.00	0.33	0.83	0.67	0.00	0.33	0.00	0.00	0.00	0.50	1.17	1.17	0.83

Course Code: IL2202

Course Name: Environmental Impact Assessment and Environmental Auditing

Course Outcomes: At the end of the course, students will be able to

[IL2202.1]. Identify objectives of an environmental impact assessment and environmental audits.

[IL2202.2]. Use the basic steps and elements of an EIA and Environmental Audit (EA).

[IL2202.3]. Apply legislation and rules for EIA, EMA, and EA.

[IL2202.4]. Identify, assess and address environmental concerns and adopt EIA & EA as tools for sustainable development.

[IL2202.5]. Conduct environmental audits and pollution prevention assessments and critically evaluate its outcomes.

Course Outcome				CO	ORREI	.ATIO	N WIT	Ή PRC	OGRAN	N OUT	COMI	ES				COR PROC OUT	RELAT GRAM COME	FION V SPEC S	VITH IFIC
	PO 1	PO       PO <th< td=""><td>PS O 4</td></th<>															PS O 4		
IL2202.1	2	2	1									1						1	2
IL2202.2	1	1	2													2	1	2	2
IL2202.3	1	1	2													3		1	1
IL2202.4	1	2					2					1						1	2
IL2202.5	1	2		2			2			2	2					1		1	
Average	1.20	1.60	1.00	0.40	0.00	0.00	0.80	0.00	0.00	0.40	0.40	0.40	0.00	0.00	0.00	1.20	0.20	1.20	1.40

Course Code: PR2104

Course Name: Industrial Project-I

Course Outcomes: At the end of the course, students will be able to

[PR2104.1]. Identify skills and capabilities that intersect effectively with the needs of industry.

[PR2104.2]. Apply and practice good communication skills in the workplace setting.

[PR2104.3]. Reflect and evaluate on experiences that might lead to future employment.

[PR2104.4]. Report research findings in written and verbal forms.

[PR2104.5]. Demonstrate and apply research skills to complete a project.

Course Outcome				COR	RELA	TION	WIT:	H PRO	OGRA	M O	UTCO	OMES				COR WIT SPE OUT	RELA H PR CIFIC COM	ATIOI OGRA IES	N AM
	PO	PO         PO<															PS	PS	PS
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$														7b	0	0	0	0
	-				24	20	22					00	U			1	2	3	4
																1	2	5	-
PR2104.1	2		2		3	3	1	3			3			1		2			
111210111	2		2		5	5	1	5			5			1		2			
PR2104.2		2			2						2		3				2		2
													-						
PR2104.3	2		2	2	2	2	2				3	3						2	
PR2104.4		3		3	3		1				2		2	3	2			2	2
PR2104.5	2			3	3	2					3			3	3	2			3
Average	1 20	1 00	0.00	1 60	2.60	1 40	0.00	0.60	0.00	0.00	2.60	0.60	1.00	1 40	1.00	0 00	0.40	0.00	1 40
Average	1.20	1.00	0.80	1.60	2.60	1.40	0.80	0.60	0.00	0.00	2.00	0.60	1.00	1.40	1.00	0.80	0.40	0.80	1.40

Course Code: PR2107

Course Name: Industrial Project-II

Course Outcomes: At the end of the course, students will be able to

[PR2104.1]. Identify skills and capabilities that intersect effectively with the needs of industry.

[PR2104.2]. Apply and practice good communication skills in the workplace setting.

[PR2104.3]. Reflect and evaluate on experiences that might lead to future employment.

[PR2104.4]. Report research findings in written and verbal forms.

[PR2104.5]. Demonstrate and apply research skills to complete a project.

Course Outcome				(	CORRE	ELATI	ON WI	TH PF	ROGRA	AM OU	JTCON	MES				CO W SF	ORREL ITH PR PECIFIC UTCON	ATION OGRA C IES	I M
	PO       PO <th< td=""><td>PSO 2</td><td>PSO 3</td><td>PSO 4</td></th<>															PSO 2	PSO 3	PSO 4	
PR2107.1	PO         PO<															2			
PR2107.2		2			2						2		3				2		3
PR2107.3	2		2	2	2	2	2				3	3						2	
PR2107.4		3		3	3		1				1		2	2	2			2	2
PR2107.5	2			3	3	2					3			2	3	2			3
Average	1.20	1.00	0.80	1.60	2.60	1.40	0.80	0.60	0.00	0.00	2.40	0.60	1.00	1.00	1.00	0.80	0.40	0.80	1.60

#### **Course Code** PO1a PO₂a PO₂b PO₂c PO₃a PO_{3b} PO₃c PO3d PO4a PO4b PO5a PO6a PO6b LS1101 0.60 0.00 0.00 1.00 0.00 0.40 0.40 0.00 0.00 1.20 0.00 0.40 0.00 EP1101 0.25 0.13 0.00 0.00 0.00 1.75 0.00 1.13 0.13 0.00 0.00 0.00 0.00 FA1101 1.00 0.50 0.25 0.00 0.25 0.00 0.00 0.50 0.75 0.50 0.25 0.00 0.00 ID1101 1.00 0.00 0.40 0.20 0.80 0.00 0.20 0.60 0.20 0.00 0.00 0.00 0.00 CC1101 0.80 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.20 0.00 0.00 AS1103 0.33 0.33 0.00 0.83 0.17 0.00 0.67 0.33 0.00 1.00 0.00 0.00 0.17 EP1102 1.29 0.57 0.14 0.14 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.29 0.00 BS1101 0.75 0.50 0.00 0.25 0.50 0.00 0.00 0.00 0.50 0.75 0.50 0.00 0.00 ED1101 0.00 0.00 0.43 0.00 1.57 0.00 0.00 0.00 0.14 0.00 0.00 0.57 0.29 CC1102 0.40 0.00 0.00 0.00 0.00 0.80 0.40 0.00 0.00 0.00 0.40 0.00 0.00 PW1101 0.25 0.50 0.00 0.00 0.25 0.25 0.00 0.00 0.00 0.25 0.25 0.00 0.00 BS1102 1.00 0.50 0.00 0.00 0.50 0.00 0.00 0.00 1.00 1.00 0.25 0.00 0.00 FA1102 0.25 0.75 0.00 0.00 0.25 1.00 0.50 0.00 0.00 0.50 1.25 0.00 0.00 MA1101 0.33 0.33 0.33 0.33 0.00 0.00 0.00 0.33 0.00 0.00 0.00 0.67 0.00 ID1102 0.75 0.00 0.00 0.00 0.75 1.25 0.50 1.50 0.75 0.50 0.00 0.00 1.50 ED1102 0.22 0.00 0.00 0.22 0.00 1.00 0.00 0.56 0.56 0.00 0.22 0.89 0.67 CC1103 0.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 2.001.00 0.00 0.00 0.00 LD1101 1.50 0.00 0.50 0.50 0.00 0.00 0.50 0.00 1.00 0.00 0.00 0.00 0.00 FA1103 1.00 0.40 0.00 0.00 1.00 0.20 0.60 0.00 1.40 0.60 0.60 0.00 0.20 MA1102 0.00 0.00 0.50 0.50 0.50 0.25 0.00 1.00 0.00 0.00 0.00 0.00 0.00 OP1101 0.25 0.50 0.50 0.25 0.25 0.50 0.50 0.50 0.75 0.50 0.75 1.00 0.50 ID1103 0.25 0.25 0.75 0.00 0.00 0.75 0.00 0.25 0.75 0.25 0.25 0.50 0.00 ED1103 0.25 0.63 0.00 0.00 0.38 0.50 0.75 0.50 0.75 0.00 0.50 1.13 0.75 CC1104 1.00 0.25 0.50 0.00 0.00 0.00 0.75 0.50 0.00 0.00 0.50 0.25 0.25 PW1102 0.50 0.00 0.00 0.25 0.50 0.00 0.00 0.00 0.25 0.25 0.25 0.00 0.00

# **Progam Articulation Matrix (BBA)**

		1	1				1				1	1	1
LS1102	0.20	0.00	0.40	0.40	0.40	0.60	0.60	0.00	0.80	0.60	0.20	0.20	0.20
FA1104	0.60	0.40	0.40	0.40	1.40	0.60	1.20	0.40	0.60	0.00	0.00	0.00	0.00
MA1103	0.75	0.00	0.00	0.50	0.25	0.00	0.75	0.25	0.00	0.50	0.00	0.00	0.00
ID1121	0.29	0.29	0.00	0.14	0.00	0.00	0.57	0.57	0.57	0.71	0.14	0.43	0.29
ED1104	0.00	0.38	0.25	0.38	1.00	0.88	0.00	0.63	0.00	0.38	0.63	0.50	1.00
CC1105	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.40	1.80	0.40	0.00
PW1104	0.00	0.00	0.00	1.25	1.50	1.75	0.00	1.25	1.50	1.00	0.00	0.00	0.00
FA1105	1.20	0.20	0.40	0.00	1.40	0.80	1.40	1.40	0.80	0.20	0.00	0.00	1.20
MA1104	0.75	0.00	0.25	0.25	0.75	0.00	0.25	0.25	0.00	0.50	0.00	0.00	0.25
ID1122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
ED1105	0.00	0.00	0.00	1.00	0.00	2.00	0.00	2.00	0.00	1.00	2.00	2.00	2.00
CC1106	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	1.00	0.00
PW1105	1.80	1.00	0.40	1.00	0.20	0.00	0.00	0.00	0.60	0.40	0.40	0.00	0.00
PW1103	0.50	0.00	0.00	0.25	0.50	0.00	0.00	0.00	0.50	0.50	0.25	0.00	0.00
Total*	22.70	5.27	4.67	8.79	24.61	12.31	13.39	16.55	22.68	17.17	10.09	8.55	7.50
Program Articulation	С	N	N	AB	С	AB	AB	C	C	С	AB	AB	N
Expectation	С	N	N	AB	С	AB	N	AB	AB	AB	AB	Ν	N

# PAM 176

# **Description of Levels of Program Articulation:**

Novice (N) (Low)	<ul> <li>Knows objective facts, features, and rules for determining actions with respect to this PO/PSO without being context sensitive.</li> <li>Has studied the basic concepts.</li> </ul>
Advanced beginner (AB) (Moderate)	<ul> <li>Recognizes common situations with respect to this PO/PSO that help in recalling which rules should be exercised, starts to recognize and handle situations not covered by given facts, features and rules.</li> <li>Has problem solving and repeated practice experience for common situations with respect to this PO/PSO.</li> </ul>
Competent (C) (High)	<ul> <li>Performs most standard actions with respect to this PO/PSO without conscious application of rules after considering the whole situation.</li> <li>Handles new situations through the appropriate application of rules, can design systems.</li> <li>May lead.</li> <li>Has demonstrated this PO/PSO through repeated engagements in advanced problem solving, projects, extensive practice in common and exception situations, and participated in professional networks.</li> </ul>

# **Rules for the Computation of Program Articulation:**

Novice (N) (Low)	Total* < 8
Advanced beginner (AB) (Moderate)	$8 \leq \text{Total}^* < 16$
Competent (C) (High)	$Total^* \ge 16$

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Course Code: LS1101

Course Name: Foundation of Management

Course Outcomes: After course completion, the student will be able to

- LS1101.1: Evaluate the context for taking managerial actions of planning, organizing and controlling
- LS1101.2: Assess global situation, including opportunities and threats that will impact management of an organization
- LS1101.3: Assess managerial practices and choices relative to ethical principles and standards
- LS1101.4: Specify how the managerial tasks of planning, organizing, and controlling can be executed in a variety of circumstances

Course Outcome		Correlation with program outcomes											
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
LS1101.1	1								2				
LS1101.2					2				2				
LS1101.3				2						2			
LS1101.4	1								2	2			
LS1101.5	1									1		2	
Average	0.60	0.00	0.00	0.40	0.40	0.00	0.00	0.00	1.20	1.00	0.00	0.40	0.00

LS1101.5: Determine the most effective action to take in specific situations

Course Code: EP1101

Course Name: Economics-I

Course Outcomes: After course completion, the student will be able to

- EP1101.1: Apply the fundamental economic concepts, theories of economic analysis in their day to day life and in business world
- EP1101.2: Recognize and interpret a Demand Curve and a Supply Curve in the market, and identify the underlying determinants of each in different industries
- EP1101.3: Calculate elasticities and apply them in various decision making processes
- EP1101.4: Analyze various production functions, cost concepts, revenue concepts and calculate break-even quantity
- EP1101.5: Relate business costs, pricing and profit
- EP1101.6: Analyze and Infer through using data and excel
- EP1101.7: Formulate the sales, output, pricing and market strategies against the dynamic business environment in different market structures
- EP1101.8: Understand market failures and role of government

Course		Correlation with program outcomes											
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	FO 00
EP1101.1	1				2								
EP1101.2					2		1						
EP1101.3					2		2						
EP1101.4					2		2	1					
EP1101.5					2		1	1					
EP1101.6							2						
EP1101.7					2		1		1				
EP1101.8					2								
Average	0.13	0.00	0.00	0.00	1.75	0.00	1.13	0.25	0.13	0.00	0.00	0.00	0.00
Course Code: FA1101

Course Name: Accounting for Business

- FA1101.1: Prepare various financial statements such as Balance sheet, Income Statement and Cash Flow Statement etc.
- FA1101.2: Analyze and interpret the accounting facts and figures for various business decisions making.
- FA1101.3: Make use of Marginal costing and breakeven analysis for various business decision making.
- FA1101.4: Identify, recognize the importance of various costs for business decision and able to Prepare a statement of cost

Course				(	Correla	tion wi	th prog	gram ou	utcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO 6h
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	10.00
FA1101.1					1		1	1					
FA1101.2					1	2		2					
FA1101.3		1			2		1						
FA1101.4									2	1	1		
Average	0.00	0.25	0.00	0.00	1.00	0.50	0.50	0.75	0.50	0.25	0.25	0.00	0.00

Course Code: ID1101

Course Name: Spreadsheet Essentials

Course Outcomes: After course completion, the student will be able to

ID1101.1: Create, format and link worksheets using MS-Excel.

ID1101.2: Use formulas and functions to perform computations on data.

ID1101.3: Create data visualizations using different types of charts.

ID1101.4: Apply Conditional formatting, Perform Goal Seek Analysis, Use lookup functions. ID1101.5: Create and update Pivot Tables and Pivot Charts.

Course				(	Correla	tion wi	th prog	gram ou	utcome	S			
Outcome	РО	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
ID1101.1	1				1			1					
ID1101.2	1		1		1								
ID1101.3	1				1		1	1					
ID1101.4	1				1			1	1				
ID1101.5	1		1	1									
Average	1.00	0.00	0.40	0.20	0.80	0.00	0.20	0.60	0.20	0.00	0.00	0.00	0.00

Course Code: CC1101

Course Name: Fundamentals of Communication

Course Outcomes: After course completion, the student will be able to

CC1101.1 Identify different cultural differences and their impact on communication.

CC1101.2 Compose grammatically correct sentences and paragraphs.

- CC1101.3 Deliver effective oral presentations following appropriate kinesics and paralinguistic features.
- CC1101.4 Identify impact of cultural differences on communication.
- CC1101.5 Apply appropriate communication skills across settings, purposes, and audiences.

Course					Correl	ation w	ith pro	gram o	utcome	es			
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	РО 6а	PO 6b
CC1101.1	1									1			
CC1101.2										2			
CC1101.3										1			
CC1101.4:	1												
CC1101.5	2									1	1		
Average	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.20	0.00	0.00

Course Code: AS1103

Course Name: Business Mathematics

- AS1103.1: Solve basic matrix and determinant problems and apply the techniques in solving related business problems.
- AS1103.2: Solve basic set problems and apply the concepts of set theory in business problems
- AS1103.3: Identify and analyze different mathematical functions and draw their graphs
- AS1103.4: Calculate derivatives of different functions and use the concept of rate of change in various applications.
- AS1103.5: Compute permutation combinations and calculate the probabilities of events and visualize different datasets.
- AS1103.6: Formulate linear programming problems with respect to industrial or societal issues.

Course				(	Correla	tion wi	ith prog	gram ou	itcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
AS1103.1	1				1				2				
AS1103.2	1								2				
AS1103.3	1	2			1								
AS1103.4			1			2							
AS1103.5					2		2						
AS1103.6	2								2				1
Average	0.83	0.33	0.17	0.00	0.67	0.33	0.33	0.00	1.00	0.00	0.00	0.00	0.17

Course Code: EP1102

Course Name: Economics-II

Course Outcomes: After course completion, the student will be able to

- EP1102.1: Apply the different concepts, theories of macroeconomic analysis in understanding business environment
- EP1102.2: Summarize the change in the size of circular flow of national income due to different withdrawals and injections, and their impact
- EP1102.3: Analyze the various macroeconomic variables and their interlinkages with each other like income, saving, consumption, investment, rate of interest, MEC and multiplier etc
- EP1102.4: Outline the money market dynamics in economy and role in determination of interest rate
- EP1102.5: Infer the phase of business cycle from present economic condition and evaluate the policy measures to control business cycle
- EP1102.6: Analyze and evaluate the basic problems of an economy which have been faced by the countries and policy makers over time like achieving high rate of growth, controlling inflation, preventing business cycles and solving problems of unemployment and poverty

Course				(	Correla	tion wi	th prog	gram ou	itcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
EP1102.1	1	1			2								
EP1102.2					2				1				
EP1102.3					1		2						
EP1102.4					2		1						
EP1102.5							2		1				
EP1102.6							2		2			2	
EP1102.7					2								
Average	0.14	0.14	0.00	0.00	1.29	0.00	1.00	0.00	0.57	0.00	0.00	0.29	0.00

EP1102.7: Explain the ripple impact of Exchange rate and BOP in an economy

Course Code: BS1101

Course Name: Organizational Behavior

- BS1101.1: Analyze the connectedness between organizational issues and human behavior of each topic covered.
- BS1101.2: Explain and justify specific theories behind human behavior.
- BS1101.3: Comprehend and formulate practical solutions for people related issues in organization.
- BS1101.4: Demonstrate proficiency in communicating ideas and work in teams.

Course				(	Correla	tion wi	th prog	gram ou	itcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
BS1101.1	2				2								
BS1101.2	1									2			
BS1101.3		2							2	1			
BS1101.4				1							2		
Average	0.75	0.50	0.00	0.25	0.50	0.00	0.00	0.00	0.50	0.75	0.50	0.00	0.00

Course Code: ED1101

Course Name: Entrepreneur and Entrepreneurship

Course Outcomes: After course completion, the student will be able to

ED1101.1: Describe the role and features of an entrepreneur, and also delineate the evolution and importance of entrepreneurship

ED1101.2: Appreciate the role of entrepreneurship in the economic development of a nation

ED1101.3: Distinguish between entrepreneur and manager

ED1101.4: Delineate the concept of Social Entrepreneurship and Women Entrepreneurship

ED1101.5: Give an overview of family business in India and identify challenges

ED1101.6: Define MSME and differentiate the different forms of the business

ED1101.7: Explain the interconnection between climate change and entrepreneurship

Course				(	Correla	tion wi	th prog	gram ou	itcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
ED1101.1					2								
ED1101.2			1		1							2	1
ED1101.3					2								
ED1101.4					2								
ED1101.5					2				1				
ED1101.6					2								
ED1101.7			2									2	1
Average	0.00	0.00	0.43	0.00	1.57	0.00	0.00	0.00	0.14	0.00	0.00	0.57	0.29

Course Code: CC1102

Course Name: Critical Thinking & Power of Storytelling

Course Outcomes: After course completion, the student will be able to

CC1102.1: Formulate intelligent questions to investigate.

CC1102.2:Evaluate information and argument for correctness, consistency, relevance and validity.

CC1102.3: Compose well-structured and well-reasoned arguments.

CC1102.4: Articulate and evaluate the impact of narratives.

CC1102.5: Distinguish between facts, assumptions and opinion.

Course					Correla	ation w	ith pro	ogram o	outcom	es			
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	PO 6a	PO 6b
CC1102.1	2								1	1			
CC1102.2							1		1				
CC1102.3									1				
CC1102.4										1			
CC1102.5							1		1				
Average	0.40	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.80	0.40	0.00	0.00	0.00

Course Code: PW1101

Course Name: Capstone-I

Course Outcomes: After course completion, the student will be able to

PW1101.1: Increasing student's motivation and engagement through increased academic rigor.

PW1101.2: Enhancing a student's educational and career aspirations.

PW1101.3: Boosting student's confidence, self-perception and self-esteem.

PW1101.4: Providing a platform for demonstrating learning and proficiency in the acquisition of knowledge and skills.

Course					Correla	ition wi	th prog	gram ou	utcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	DO ch
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	PO 60
PW1101.1	1				1								
PW1101.2									1				
PW1101.3				1							1		
PW1101.4	1									1			
Average	0.50	0.00	0.00	0.25	0.25	0.00	0.00	0.00	0.25	0.25	0.25	0.00	0.00

Course Code: BS1102

Course Name: Human Resource Management

Course Outcomes: After course completion, the student will be able to

BS1102.1: Explain the various functions of human resource management and identify their relationship to the workplace from the perspective of both employee and employer.

- BS1102.2: Exhibit an understanding of the important role that human resources play in an organization.
- BS1103.3: Analyze the training needs of an organization.
- BS1104.4: Assess, design, access and implement various methods, techniques and sources of training.

Course				(	Correla	tion wi	th prog	gram ou	utcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
BS1102.1	1	2											
BS1102.2	1				2								
BS1102.3	1								2	2			
BS1102.4	1								2	2	1		
Average	1.00	0.50	0.00	0.00	0.50	0.00	0.00	0.00	1.00	1.00	0.25	0.00	0.00

Course Code: FA1102

Course Name: Management Accounting

Course Outcomes: After course completion, the student will be able to

FA1102.1: Analyze and interpret the financial statements for managerial decision making

FA1102.2: Prepare Cash, sales and other functional budgets

- FA1102.3: Make cost, volume and profit analysis and suggest the breakeven points and managerial decision on the basis of contribution factors
- FA1102.4: Find and control cost through standard costing and variance analysis

Course				(	Correla	tion wi	ith prog	gram o	utcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
FA1102.1	1				2		1	2	1				
FA1102.2			1			2		1					
FA1102.3					1		1	1					
FA1102.4					1		1	1	1				
Average	0.25	0.00	0.25	0.00	1.00	0.50	0.75	1.25	0.50	0.00	0.00	0.00	0.00

Course Code: MA1101

Course Name: Principles of Marketing

Course Outcomes: After course completion, the student will be able to

MA1101.1: To introduce the key elements in developing a marketing strategy and planning a marketing program.

MA1101.2: To enhance the problem solving skills in marketing by offering a set of analytical tools (frameworks, concepts, models, and techniques).

MA1101.3: To provide understanding of elements of marketing mix.

Course					Correla	ation wi	ith prog	gram oi	utcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
MA1101.1		1			1								
MA1101.2									2	1			
MA1101.3	1						1						
Average	0.33	0.33	0.00	0.00	0.33	0.00	0.33	0.00	0.67	0.33	0.00	0.00	0.00

Course Code: ID1102

Course Name: Statistical Reasoning

- ID1101.1: Identify and use the various statistical tools.
- ID1101.2: Develop an aptitude towards analyzing, interpreting quantitative data and lay foundation for data analysis.
- ID1101.3: Students can complete an introductory course on statistics at Coursera and other online platforms.
- ID1101.4: Use MS-Excel for data analysis using statistics

Course				(	Correla	tion wi	th prog	gram ou	itcome	S			
Outcome	РО	PO	PO	РО	PO	РО	РО	PO	РО	РО	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
ID1102.1	1				1	2	2		1	1	1		
ID1102.2	1				1	2			2				
ID1102.3							1	2	1	1			
ID1102.4	1				1	2	2		2	1	1		
Average	0.75	0.00	0.00	0.00	0.75	1.50	1.25	0.50	1.50	0.75	0.50	0.00	0.00

Course Code: ED1102

Course Name: Idea to Business Model

Course Outcomes: After course completion, the student will be able to

ED1102.1: Identify problem worth solving through design thinking.

ED1102.2: Identify customer segment and niche for specific markets

ED1102.3: Craft Value Preposition Canvas

ED1102.4: Create business model using Lean Canvas Template

ED1102.5: Build 'A' team for new start-ups

ED1102.6: Design and validate solution demo and MVP

ED1102.7: Analyze cost, revenue, key channels and pricing model for the venture

ED1102.8: Craft positioning statement of a new venture

ED1102.9: Classify the different sources of funding

Course				(	Correla	tion wi	th prog	gram ou	ıtcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO 6h
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	1000
ED1102.1					1				2			2	1
ED1102.2					1				1				1
ED1102.3					2			2				2	
ED1102.4					1			2				2	2
ED1102.5											2		
ED1102.6								1				2	2
ED1102.7					2		2						
ED1102.8			2						2				
ED1102.9					2								
Average	0.00	0.00	0.22	0.00	1.00	0.00	0.22	0.56	0.56	0.00	0.22	0.89	0.67

Course Code: CC1103

Course Name: Perspectives on Contemporary Issues

- 1. Identify different perspectives objectively.
- 2. Explain interconnectedness of the issues and their impact at micro and macro levels.
- 3. Recognize their own beliefs, biases, claims and assumptions.
- 4. Evaluate sources, argue and defend effectively.

Course				(	Correla	tion wi	th prog	gram o	utcome	s			
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	PO 6a	PO 6b
CC1103.1.	1								2	1			
CC1103.2.	1								2	1			
CC1103.3.	1								2	1			
CC1103.4.	1								2	1			
Average	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	1.00	0.00	0.00	0.00

Course Code: LD1101

Course Name: Understanding and Leading Self

Course Outcomes: After course completion, the student will be able to

LD1101.1: Clearly map their personal strengths and identify their personal brand.

LD1101.2: Identify the personal goals and related competencies required.

- LD1101.3: Create Personal Leadership Development Plans by analyzing activities they need to continue or eliminate to become who they want to be.
- LD1101.4: Demonstrate awareness and take ownership of key societal responsibilities to lead positive change so as to define his/her personal leadership

Course				(	Correla	tion wi	th prog	gram ou	utcome	s			
Outcome	PO 1a	PO 2a	PO 2h	PO 2c	PO 3a	PO 3h	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	PO 6a	PO 6b
LD1101 1	2	Za	20	20	Ja	50	50	Ju	$\frac{+a}{2}$	40	Ja	0a	
	-								2				
LD1101.2	1					2							
LD1101.3	1					2					2		
LD1101.4	2			2									
Average	1.50	0.00	0.00	0.50	0.00	1.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00

Course Code: FA1103

Course Name: Financial Management

- FA1103.1: Acquire and exhibit an understanding of finance and the role that finance plays within an organization
- FA1103.2: Acquire and exhibit an understanding to utilize TVM in different financial decisions.
- FA1103.3: Critically analyze viability of different projects of capital nature
- FA1103.4: Critically evaluate different sources of capital and to develop understanding of the cost involved in financing alternatives
- FA1103.5: Analyze dividend distribution pattern of companies and role of dividend to enhance shareholder's wealth

Course				(	Correla	tion wi	ith prog	gram ou	ıtcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	ба	6b
FA1103.1	2	1	1		2								
FA1103.2	2				2			1					
FA1103.3			2		2	1	2						1
FA1103.4							2	1	2				
FA1103.5	1				1	2	1		1				
Average	1.00	0.20	0.60	0.00	1.40	0.60	1.00	0.40	0.60	0.00	0.00	0.00	0.20

Course Code: MA1102

Course Name: Advertising & Sales Management

- MA1102.1: Explain the concept of marketing communication mix and sales management in theory and practice.
- MA1102.2: Analyze the role and configuration of the marketing communication mix and explains the main characteristics associated with the principal tools and media.
- MA1102.3: Interpret the fundamental principle of 'place' in the marketing mix and to management decisions concerning distribution channels, channel members, logistics management, retailing and wholesaling.
- MA1102.4: Create marketing strategy to achieve the long-term objectives for a firm in a competitive market situation.

Course				(	Correla	tion wi	th prog	gram ou	ıtcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	la	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
MA1102.1					2								
MA1102.2					1			1					
MA1102.3	1				1			1					
MA1102.4							2			2			
Average	0.25	0.00	0.00	0.00	1.00	0.00	0.50	0.50	0.00	0.50	0.00	0.00	0.00

Course Code: OP1101

Course Name: Operations Management

Course Outcomes: After course completion, the student will be able to

OP1101.1: Learn operations management vocabulary.

OP1101.2: Learn various tools and methods used in operations management

OP1101.3: Develop an aptitude to present their views and discuss a topic.

OP1101.4: Prepare themselves for objective questions, job interviews and discussion.

Course				(	Correla	tion wi	th prog	gram ou	itcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	la	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
OP1101.1	1								1	1	1		
OP1101.2	1	1	1		1	2		1	1				
OP1101.3		1		2	2		2	2	2	1		1	1
OP1101.4												1	
Average	0.50	0.50	0.25	0.50	0.75	0.50	0.50	0.75	1.00	0.50	0.25	0.50	0.25

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Course Code: ID1103

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Course Name: Data Driven Business Decisions

Course Outcomes: After course completion, the student will be able to

ID1103.1: Understand how to use data analytics to create value for business.

ID1103.2: Perform sophisticated data analysis using Microsoft Excel.

ID1103.3: Identify and develop skills needed to be successful in data analysis jobs.

ID1103.4: Assess organizations on their effectiveness in using the data analytics.

Course				(	Correla	tion wi	th prog	gram ou	itcome	S			
Outcome	PO	PO	PO 21	PO	PO	PO 21	PO	PO	PO	PO 41	PO 5	PO	PO
	la	Za	20	2C	3a	30	3C	30	4a	40	Ja	6a	6D
ID1103.1	1				1			1	1	1			
ID1103.2	1				1		1	2					
ID1103.3			1								2		
ID1103.4	1				1								1
Average	0.75	0.00	0.25	0.00	0.75	0.00	0.25	0.75	0.25	0.25	0.50	0.00	0.25

Course Code: ED1103

Course Name: Business Model to Product Market Fit

Course Outcomes: After course completion, the student will be able to

ED1103.1: Refine business models and expand customer segments

ED1103.2: Design business plan for the venture

ED1103.3: Explore and develop the strategies to grow revenue and market

ED1103.4: Understand funding process and what investor look for

ED1103.5: Learn to build an A- Team and how to pitch the venture

ED1103.6: Develop brand strategy and channel strategy for customer outreach

ED1103.7: Understand the key metrics to measure & track the venture progress

ED1103.8: Select the right type of legal form of the venture and understand the legal issues related to it.

Course				(	Correla	tion wi	ith prog	gram ou	ıtcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
ED1103.1	2				2	1							2
ED1103.2	1					1		1			1	2	
ED1103.3	2					2			2				
ED1103.4				1				1			1	1	1
ED1103.5									2		2	2	2
ED1103.6				2				2				1	
ED1103.7						2	2					1	
ED1103.8					2				2			2	1
Average	0.63	0.00	0.00	0.38	0.50	0.75	0.25	0.50	0.75	0.00	0.50	1.13	0.75

## Course Code: CC1104

## Course Name: Communication and Identity

Course Outcomes: After course completion, the student will be able to

CC1104.1: Analyse their personal identities, both private and social

CC1104.2: Identify their different values, strengths and areas of professional interest

CC1104.3: Articulate their personal statement and use it to craft an influential pitch

CC1104.4: Express themselves through various communication formats on different platforms

Course				(	Correla	tion w	ith pro	gram o	utcome	es			
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	PO 6a	PO 6b
CC1104.1	2	1		1						1	2		
CC1104.2	2				1				1			1	
CC1104.3				1	1					1			
CC1104.4										1			
Average	1.00	0.25	0.00	0.50	0.50	0.00	0.00	0.00	0.25	0.75	0.50	0.25	0.00

Course Code: PW1102

Course Name: Capstone-II

Course Outcomes: After course completion, the student will be able to

PW1102.1: Increasing student's motivation and engagement through increased academic rigor.

PW1102.2: Enhancing a student's educational and career aspirations.

PW1102.3: Boosting student's confidence, self-perception and self-esteem.

PW1102.4: Providing a platform for demonstrating learning and proficiency in the acquisition of knowledge and skills.

Course					Correla	ition wi	th prog	gram ou	utcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	PO od
PW1102.1	1				2								
PW1102.2									1				
PW1102.3				1							1		
PW1102.4	1									1			
Average	0.50	0.00	0.00	0.25	0.50	0.00	0.00	0.00	0.25	0.25	0.25	0.00	0.00

Course Code: LS1102

Course Name: Legal Aspects of Business

Course Outcomes: After course completion, the student will be able to

LS1102.1: Appreciate the relevance of business law to individuals and businesses and the role of law in an economic, political and social context.

LS1102.2: Identify the fundamental legal principles behind contractual agreements.

LS1102.3: Examine how businesses can be held liable in tort for the actions of their employees.

LS1102.4: Understand the legal and fiscal structure of different forms of business organizations and their responsibilities as an employer.

LS1102.5: Acquire problem solving techniques and to be able to present coherent, concise legal argument.

Course				(	Correla	tion wi	ith prog	gram ou	utcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	DO 6h
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	ба	
LS1102.1	1		2	2									
LS1102.2					2	2			1				
LS1102.3						1	1		2	2			
LS1102.4											1	1	1
LS1102.5							2		1	1			
Average	0.20	0.00	0.40	0.40	0.40	0.60	0.60	0.00	0.80	0.60	0.20	0.20	0.20

Course Code: FA1104

Course Name: Taxation

- FA1104.1: Understand and differentiate basic terms under the Income Tax Act, 1961 and to determine residential status of an assessee
- FA1104.2: Differentiate various sources of income of an assessee under different heads of income of Income Tax Act, 1961
- FA1104.3: Acquaint with the Concepts of GST in India and acquaint them with its terminology
- FA1104.4: Comprehend the application to GST in various types of business and services
- FA1104.5: Calculate the GST in connection with SGST, CGST and IGST and process GST return file

Course				(	Correla	tion wi	th prog	gram ou	ıtcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO -	PO	PO 6b
	la	2a	2b	2c	3a	30	3C	3a	4a	4b	Sa	6a	
FA1104.1	1	2	1		2								
FA1104.2	1			1	2			1					
FA1104.3			1	1	2	1	2						
FA1104.4							2	1	2				
FA1104.5	1				1	2	2		1				
Average	0.60	0.40	0.40	0.40	1.40	0.60	1.20	0.40	0.60	0.00	0.00	0.00	0.00

Course Code: MA1103

Course Name: Consumer Behavior

Course Outcomes: After course completion, the student will be able to

MA1103.1: Acquire a framework for analyzing consumer behavior problems

MA1103.2: Learn how consumer behavior can be affected by different marketing strategies

MA1103.3: Show how behavioral evidence can be used to evaluate alternative marketing strategies

MA1103.4: Learn about and use consumer behavior theories in marketing and social psychology

Course				(	Correla	tion wi	th prog	gram ou	utcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
MA1103.1	1				1								
MA1103.2				1			1						
MA1103.3	1						1	1					
MA1103.4	1			1			1			2			
Average	0.75	0.00	0.00	0.50	0.25	0.00	0.75	0.25	0.00	0.50	0.00	0.00	0.00

Course Code: ID1121

Course Name: Intelligent Automation

Course Outcomes: After course completion, the student will be able to

ID1121.1: Discuss insightfully role of artificial intelligence and robotics in automation.

ID1121.2: Use and understand the various functionalities and features of UiPath Studio.

ID1121.3: Design, implement, and use robotic process automation activities.

ID1121.4: Explore various data extraction techniques.

ID1121.5: Implement Email Automation

ID1121.6: Identify processes which can be automated.

ID1121.7: Apply best practices in RPA use cases.

Course					Correl	ation w	ith pro	gram o	utcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	ба	6b
ID1121.1	2	1								1			
ID1121.2							1	1	1				
ID1121.3								1		2		1	
ID1121.4							1		1	1			
ID1121.5							1					1	1
ID1121.6							1		2	1		1	1
ID1121.7		1		1				2			1		
Average	0.29	0.29	0.00	0.14	0.00	0.00	0.57	0.57	0.57	0.71	0.14	0.43	0.29

Course Code: ED1104

Course Name: Sustaining and Growing Start-ups

Course Outcomes: After course completion, the student will be able to

ED1104.1: Understand the evolution of a start-up

ED1104.2: Built Collaboration and Networking

ED1104.3: Learn to apply the process of IPR

ED1104.4: Explore the ways of growing business and manage growth

ED1104.5: Understand the role of leadership in growing business

ED1104.6: Create new strategies of marketing and growth

ED1104.7: Learn the role of business for social responsibility

ED1104.8: Understand the process revival of sick ventures and exit from a venture

Course					Correla	tion wi	ith prog	gram o	utcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
ED1104.1				3	2	2							
ED1104.2										3	2		2
ED1104.3					3								
ED1104.4						3		2				2	3
ED1104.5											3		
ED1104.6					3							2	3
ED1104.7		3	2										
ED1104.8						2		3					
Average	0.00	0.38	0.25	0.38	1.00	0.88	0.00	0.63	0.00	0.38	0.63	0.50	1.00

Course Code: CC1105

Course Name: Understanding and Managing Conflict

Course Outcomes: After course completion, the student will be able to-

CC1105.1: Define a group and explain the stages of group development.

CC1105.2: Describe conflict and explain types and causes of conflict.

CC1105.3: Use inquiry and advocacy to engage with groups.

CC1105.4: Give and receive feedback effectively.

CC1105.5: Identify sources of conflict and manage them using difference conflict handling styles.

Course				(	Correla	tion wi	th prog	gram o	utcome	es			
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	PO 6a	PO 6b
CC1105.1	1										1		
CC1105.2	1											1	
CC1105.3	1										2		
CC1105.4	1									2	3		
CC1105.5	1										3	1	
Average	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.40	1.80	0.40	0.00

Course Code: PW1104

Course Name: Summer Internship Project

- PW1104.1: Apply theoretical concept in live projects
- PW1104.2: Integrate theoretical knowledge with the application of technical and managerial skills involved in professional environment
- PW1104.3: Closely understand and participate in business operations and decision making process
- PW1104.4: Work under the guidance and support of industry mentors to become industry ready professionals

Course				(	Correla	tion w	ith pro	gram o	utcom	es			
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3h	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	PO 6a	PO 6b
PW1104.1	Iu	24	20	2	3	3		2	2	10	<u>cu</u>	ou	
PW1104.2					3	2		3	2				
PW1104.3						2			2	2			
PW1104.4				3						2			
Average	0.00	0.00	0.00	1.25	1.50	1.75	0.00	1.25	1.50	1.00	0.00	0.00	0.00

Course Code: FA1105

Course Name: Indian Financial System

- FA1105.1: Evaluate role and significance of financial system in economic development
- FA1105.2: Critically analyze capital adequacy of Indian commercial banks in relation to global standards
- FA1105.3: Practically understand the mechanism of new issue market and stock exchange
- FA1105.4: Assimilate practical aspects of foreign exchange operations
- FA1105.5: Learn and utilize knowledge of operating mechanism of several financial services in diverse decision making areas

Course					Correla	tion wi	th prog	gram ou	utcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
FA1105.1	2	1	1		2	1	1	3					
FA1105.2	2		1		2		1	1					2
FA1105.3	1				2	1	2	2	1				2
FA1105.4							2	1	2				
FA1105.5	1				1	2	1		1	1			2
Average	1.20	0.20	0.40	0.00	1.40	0.80	1.40	1.40	0.80	0.20	0.00	0.00	1.20

Course Code: MA1104

Course Name: Brand Management

Course Outcomes: After course completion, the student will be able to

MA1104.1: Develop a consumer-centric approach in building, measuring and evaluating strategies that build brand equity for new and existing brands.

MA1104.2: Identify important issues related to planning and implementing brand strategies

- MA1104.3: Learn how to identify brand meaning and to measure brand strength for any particular market offering.
- MA1104.4: Apply branding principles and marketing communication concepts and frameworks to achieve brand management goals and improve marketing performance.

Course				(	Correla	tion wi	th prog	gram ou	itcome	S			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6а	6b
MA1104.1	1		1		1		1						
MA1104.2	1				1					2			
MA1104.3	1				1			1					
MA1104.4				1									1
Average	0.75	0.00	0.25	0.25	0.75	0.00	0.25	0.25	0.00	0.50	0.00	0.00	0.25

Course Code: ID1122

Course Name: Introduction to Web Development

Course Outcomes: After course completion, the student will be able to

ID1122.1. Learn the web design concept and web publishing or Hosting

ID1122.2. Write the code in HTML for a Web page.

ID1122.3. Design the web page using CSS

ID1122.4. Create a Web site using WordPress

ID1122.5. Write code using JavaScript.

Course				(	Correla	tion wi	ith prog	gram ou	utcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
ID1122.1								3					
ID1122.2								3					
ID1122.3								3					
ID1122.4								3					
ID1122.5								3					
Average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00

Course Code: ED1105

Course Name: Run Your Venture

Course Outcomes: After course completion, the student will be able to

ED1105.1: Upon successful completion of the course, the students will be able to learn to create, develop and manage a venture.

Course				(	Correla	tion wi	ith prog	gram ou	utcome	S			
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	PO 6a	PO 6b
ED1105.1				1		2		2		1	2	2	2
Average	0.00	0.00	0.00	1.00	0.00	2.00	0.00	2.00	0.00	1.00	2.00	2.00	2.00

Course Code: CC1106

Course Name: Critical Thinking for Decisions at Workplace

- CC1106.1: Apply techniques of Critical Thinking to analyze organizational problems through positive inquiry.
- CC1106.2: Describe and analyze appropriate problem-solving and ethical decision-making processes.
- CC1106.3: Choose the most effective and logical decision among multiple alternatives.
- CC1106.4: Evaluate solutions and anticipate likely risks based on purpose, context and ethics.

Course				(	Correla	tion wi	th prog	gram o	utcome	s			
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 3d	PO 4a	PO 4b	PO 5a	PO 6a	PO 6b
CC1106.1	1								3	2		1	
CC1106.2	1								2	2		1	
CC1106.3	1								2	2		2	
CC1106.4	1								1	2			
Average	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00	1.00	0.00

Course Code: PW1105

Course Name: Social Project

- PW1105.1: Gain an understanding of the surrounding urban and rural communities and social realities
- PW1105.2: Appreciate the significant contribution of local communities to Indian society and economy.
- PW1105.3: Analyze the issues and challenges of local community
- PW1105.4: Identify ways and means to contribute towards the sustaining the development of community.
- PW1105.5: Develop a sense of empathy and bond of mutuality with local community.

Course				(	Correla	tion wi	th prog	gram ou	utcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	ба	6b
PW1105.1	1	2											
PW1105.2	2	2			1								
PW1105.3	2								3	2			
PW1105.4	2	2	2	2									
PW1105.5	2			3							2		
Average	1.80	1.00	0.40	1.00	0.20	0.00	0.00	0.00	0.60	0.40	0.40	0.00	0.00
Course Code: PW1103

Course Name: Capstone-III

Course Outcomes: After course completion, the student will be able to

PW1103.1: Increasing student's motivation and engagement through increased academic rigor.

PW1103.2: Enhancing a student's educational and career aspirations.

PW1103.3: Boosting student's confidence, self-perception and self-esteem.

PW1103.4: Providing a platform for demonstrating learning and proficiency in the acquisition of knowledge and skills.

Course				(	Correla	tion wi	ith prog	gram ou	utcome	s			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	4a	4b	5a	6a	6b
PW1103.1	1				2								
PW1103.2									2				
PW1103.3				1							1		
PW1103.4	1									2			
Average	0.50	0.00	0.00	0.25	0.50	0.00	0.00	0.00	0.50	0.50	0.25	0.00	0.00

Course Code	PO1a	PO2a	PO2b	PO2c	PO3a	PO3b	PO3c	PO3d	PO3e	PO4a	PO4b	PO5a	PO5b	PO6a	PO6b
CC2111	2.25	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.50	1.25	1.00	0.00	1.75	0.00
ED2111	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.50	0.50	0.50	0.25	0.25	0.50	0.50
EP2102	0.20	0.30	0.20	0.00	2.90	0.40	2.50	0.40	0.80	0.20	0.00	0.00	0.20	0.00	0.00
FA2101	1.33	0.00	0.00	0.00	2.00	0.67	1.33	0.33	1.00	2.00	1.33	0.33	0.33	0.00	0.00
ID2111	1.57	0.29	1.43	0.86	1.57	0.00	0.29	0.71	0.43	0.00	0.00	0.57	0.00	0.57	0.00
LD2111	1.20	1.00	0.40	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.40	0.00	0.00
MA2101	1.50	1.50	0.00	0.00	2.50	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
BS2101	1.50	1.00	0.00	0.00	1.25	0.00	0.25	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CC2105	0.57	0.00	0.00	0.29	0.29	0.29	0.29	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00
CC2112	1.75	0.00	0.00	0.00	1.25	0.00	1.00	0.00	0.00	1.75	0.75	0.00	0.00	0.00	0.00
ED2104	1.25	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.75	1.25	0.75
EP2103	0.40	0.00	0.00	0.00	2.00	0.00	1.60	2.40	1.20	0.80	0.00	0.00	0.40	0.00	0.00
FA2102	0.83	0.00	0.67	0.00	2.17	1.83	1.50	0.33	0.67	1.00	0.83	0.00	0.00	0.00	0.00
ID2112	1.00	0.00	1.00	0.00	0.67	0.33	1.00	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.67
OP2102	0.80	0.40	0.60	0.00	0.80	0.20	0.60	0.80	0.00	1.00	0.60	0.60	0.00	0.40	0.00
MA2105	1.33	0.00	0.33	0.00	1.67	0.00	0.00	0.33	0.33	0.33	0.00	0.00	0.00	0.67	0.00
BS2102	0.80	0.00	0.00	0.40	1.20	0.40	0.00	1.00	0.00	0.00	0.40	1.20	0.00	0.00	0.00
MA2111	2.00	0.00	0.00	0.00	2.00	0.00	1.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00
ID2101	0.20	0.40	0.00	0.00	0.00	0.00	0.20	0.00	0.80	0.40	0.40	0.00	0.00	0.00	0.00
ED2105	0.60	0.00	0.00	0.00	2.60	0.00	0.00	0.40	0.00	0.60	0.60	0.00	0.00	2.20	1.60
CC2201	2.75	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.00	1.75	1.00	0.00	0.00	0.00	0.00
ID2113	1.67	0.33	0.00	0.00	1.33	0.00	0.67	1.00	1.33	0.67	0.00	0.00	0.00	0.00	0.00
PW2101	1.50	0.00	0.00	0.00	0.75	0.75	0.75	0.75	0.50	1.00	1.25	1.25	0.50	0.00	0.00
LS2104	0.67	0.00	1.00	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.67	0.00	0.00
LS2105	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.25	0.00	0.00	0.00	0.00
MA2201	1.33	2.00	1.33	0.00	2.00	1.33	0.00	0.00	0.00	0.67	1.33	0.33	0.00	0.67	0.00

# **Program Articulation Matrix (MBA)**

CC2113	2.00	0.00	0.00	1.00	0.50	0.50	0.00	0.00	0.00	0.00	1.25	0.50	0.75	0.00	0.00
ED2201	0.50	0.50	0.75	0.75	0.75	0.75	0.75	0.50	0.50	1.00	1.00	1.00	1.00	0.75	0.75
PW2106	0.40	0.80	1.20	0.80	0.20	0.20	0.80	0.80	0.80	1.60	1.60	0.80	0.80	0.40	0.40
PW2102	0.00	0.00	0.00	1.25	1.50	1.75	1.50	2.75	2.25	1.25	0.50	0.75	0.50	0.00	0.00
MA2211	1.75	1.75	0.75	0.00	1.75	0.00	0.25	0.50	0.00	0.25	0.00	0.00	0.00	0.75	0.00
FA2203	2.00	0.00	1.50	0.00	2.00	0.00	1.50	1.00	1.00	0.50	0.00	0.00	0.00	0.00	0.00
OP2211	1.00	0.00	1.50	1.50	1.50	0.50	1.50	0.50	0.50	1.50	1.50	1.00	0.50	0.00	0.00
BS2104	1.00	0.00	0.00	0.00	1.83	0.00	0.67	1.83	0.00	0.50	0.50	0.33	0.33	0.17	0.00
FA2205	0.67	0.00	0.33	0.33	0.33	0.33	0.33	0.67	0.67	0.33	1.00	1.00	1.00	0.33	0.33
ST2102	0.25	0.25	0.25	0.25	0.25	0.75	1.25	1.00	0.50	0.25	0.25	0.50	0.25	0.50	1.00
MA2212	1.33	1.33	0.00	0.00	1.67	0.00	0.00	0.67	0.00	0.00	0.33	0.00	0.00	0.67	0.00
MA2213	0.50	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	1.00	0.50
FA2103	1.00	0.00	0.00	0.00	1.33	0.67	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CC2115	1.60	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.40	2.40	0.80	0.00	0.00
ED2202	0.40	0.20	0.80	0.80	1.20	0.80	0.80	1.20	1.20	0.60	0.60	0.20	0.20	0.20	0.20
ID2180	1.38	0.00	0.00	0.00	1.54	0.00	0.69	0.85	1.46	1.69	0.62	0.31	0.15	0.46	0.08
FA2202	0.00	0.67	0.67	0.00	1.67	0.67	1.33	0.67	0.67	1.00	1.00	0.67	0.67	0.00	0.00
MA2214	0.60	0.60	0.60	0.60	1.30	1.00	1.20	1.10	1.50	0.90	0.70	0.80	1.00	0.40	0.40
OP2213	1.00	0.00	1.00	1.00	1.00	0.33	0.67	0.33	0.67	0.67	1.67	1.33	1.00	0.33	0.00
BS2105	1.00	0.00	0.00	0.50	1.25	2.25	0.00	0.25	0.25	0.00	0.75	1.00	0.50	0.25	0.50
ST2203	0.20	1.40	1.80	1.20	0.40	0.40	0.60	0.60	1.20	0.60	0.60	1.60	1.40	0.20	0.20
MA2203	0.86	0.71	0.29	0.00	0.71	0.86	0.71	0.00	0.00	0.57	0.29	0.00	0.00	0.86	0.29
CC2114	2.75	0.00	0.00	0.50	0.00	0.00	1.50	0.00	0.00	1.00	1.75	2.00	0.50	0.00	0.00
FA2204	0.80	0.40	1.00	0.00	1.60	0.40	0.80	0.40	0.80	0.80	0.00	0.40	0.00	0.00	1.20
MA2202	1.25	1.50	0.00	0.00	1.50	0.00	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00
BS2106	1.00	0.00	0.00	1.00	3.00	1.00	0.50	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00
Total*	56.75	18.83	19.90	14.79	62.29	19.61	32.91	26.16	21.52	32.05	28.80	24.40	15.35	16.77	10.36
Program Articulation	С	AB	AB	AB	C	AB	C	C	AB	С	С	AB	AB	AB	Ν
Expectation	С	AB	AB	AB	C	AB	Ν	N							

# **Description of levels of Program Articulation:**

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Novice (N) (Low)	<ul> <li>Knows objective facts, features, and rules for determining actions with respect to this PO/PSO without being context sensitive.</li> <li>Has studied the basic concepts.</li> </ul>
Advanced beginner (AB) (Moderate)	<ul> <li>Recognizes common situations with respect to this PO/PSO that help in recalling which rules should be exercised, starts to recognize and handle situations not covered by given facts, features and rules.</li> <li>Has problem solving and repeated practice experience for common situations with respect to this PO/PSO.</li> </ul>
Competent (C) (High)	<ul> <li>Performs most standard actions with respect to this PO/PSO without conscious application of rules after considering the whole situation.</li> <li>Handles new situations through the appropriate application of rules, can design systems.</li> <li>May lead.</li> <li>Has demonstrated this PO/PSO through repeated engagements in advanced problem solving, projects, extensive practice in common and exception situations, and participated in professional networks.</li> </ul>

## Calculation Criteria for the Program Articulation Levels:

Novice (N) (Low)	Total* < 12
Advanced beginner (AB) (Moderate)	12 ≤ Total* < 25
Competent (C) (High)	Total* $\geq 25$

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## **Trimester-I**

Course Code: CC2111

Course Name: Fundamentals of Communication

Course Outcomes: After course completion, the student will be able to

CC2111.1: Identify different cultural differences and their impact on communication.

CC2111.2: Deliver effective oral presentations following appropriate kinesics and paralinguistic features.

CC2111.3: Apply appropriate communication skills across settings, purposes, and audiences CC2111.4: Compose grammatically correct sentences and paragraphs

Course						Co	rrelati	on wit	h prog	gram o	outcon	nes			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO						
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
CC2111.1	3										2	2		2	
CC2111.2	2				3					2				2	
CC2111.3	3										3	2		2	
CC2111.4	1				2									1	
Average	2.25	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.50	1.25	1.00	0.00	1.75	0.00

#### Course Code: ED2111

Course Name: Product Launch

Course Outcomes: After course completion, the student will be able to

ED2111.1: Develop an awareness of the role of multiple functions in creating a business of a Service or a product (e.g. marketing, finance, design, photography, engineering, production, retail....).

i. Awareness of the role of multiple functions in creating a new product

- ED2111.2: Attain an ability to coordinate multiple, interdisciplinary tasks in order to achieve a common objective
- ED2111.3: To assimilate how Product, Proposition and Values are integral in the process of business and specifically product and solutions development. Soto understand that a solution through a product could be incremental or evolutionary.
- ED2111.4: Service businesses, Products and Solutions allied communication need to be culturally and contextually, relevant (e.g., Cannot attempt to market meat-products to vegetarian and vegan customers)

Course Outcome						Correla	tion wi	th prog	ram ou	tcomes					
	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО	РО
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ED2111.1	2	1	1					1	2		2				
ED2111.2			1		1	1	1								
ED2111.3		1		1						1		1	1	2	2
ED2111.4				1						1					
Average	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	0.50	0.50	0.50	0.25	0.25	0.50	0.50

Course Code: EP2102

Course Name: Economics for Business

- Course Outcomes: After course completion, the student will be able to understand:
- EP2102.1: Demand, Supply, Equilibrium, Pareto optimality
- EP2102.2: Elasticity and its relationship with pricing and revenue
- EP2102.3: Economics of production
- EP2102.4: Economic costs for decision-making
- EP2102.5: Different types of market structures (e.g., Perfect Competition, Monopoly, Duopoly)
- EP2102.6: Basic models of Game Theory
- EP2102.7: Pricing
- EP2102.8: Market Failures: Public Goods, Externalities, Moral Hazard, And Adverse Selection
- EP2102.9: The role of government in correcting market failures. Of particular interest is the effect of taxes and government policies on markets.
- EP2102.10: Applications of economic principles to policy questions

Course Outcome					Co	rrelatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
EP2102.1	2				3		3								
EP2102.2					3		3		2						
EP2102.3					3	2		2							
EP2102.4					3		3		2						
EP2102.5					3		3	2	2	2					
EP2102.6					3		3								
EP2102.7					3		3		2						
EP2102.8		3	2		3		2								
EP2102.9					2	2	3								
EP2102.10					3		2						2		
Average	0.20	0.30	0.20	0.00	2.90	0.40	2.50	0.40	0.80	0.20	0.00	0.00	0.20	0.00	0.00

Course Code: FA2101

Course Name: Financial Accounting for Decision Making

- FA2101.1: Assess the impact of business transactions on the financial health of the business including performance, position, and liquidity
- FA2101.2: Understand the preparation of the three financial statements of a corporate enterprise –Balance Sheet, Statement of Profit and Loss and the Cash Flow Statement
- FA2101.3: Analyze the financial statements using various tools of analysis such as ratio analysis, common sizing, and trend analysis

Course					C	orrela	tion v	vith pi	rogram	n outco	omes				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6а	6b
FA2101.1	2				2					2	2				
FA2101.2					2		2			2					
FA2101.3	2				2	2	2	1	3	2	2	1	1		
Average	1.33	0.00	0.00	0.00	2.00	0.67	1.33	0.33	1.00	2.00	1.33	0.33	0.33	0.00	0.00

Course Code: ID2111

Course Name: Foundation of Data Analysis

Course Outcomes: After course completion, the student will be able to

ID2111.1: Understand and appreciate the role of data analysis in business decisions.

ID2111.2: Use spreadsheet software to perform exploratory data analysis.

ID2111.3: Set up and work with discrete and continuous random variables.

ID2111.4: Know what expectation, variance and covariance mean and compute them.

ID2111.5: Understand binomial, Poisson and normal distributions and their properties.

ID2111.6: Compute estimates of population from samples and assess their accuracy.

ID2111.7: Calculate sample size required for any desired level of precision in estimation.

Course					Co	rrelatio	on wit	h prog	gram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ID2111.1	2	2			2			3	3						
ID2111.2	3		2				2	2							
ID2111.3	2				3										
ID2111.4	2				3										
ID2111.5	2		2		3										
ID2111.6			3	3								2		2	
ID2111.7			3	3								2		2	
Average	1.57	0.29	1.43	0.86	1.57	0.00	0.29	0.71	0.43	0.00	0.00	0.57	0.00	0.57	0.00

Course Code: LD2111

Course Name: SEE Learning: Mindfulness, Compassion and Ethics

- LD2111.1: Gain attentiveness and awareness of their own thoughts and feelings and develop self-regulation skills.
- LD2111.2: Reflect and assess their experience
- LD2111.3: Develop consciousness and compassion for others and their interdependence in broader systems within which they live.
- LD2111.4: Engage effectively and confidently with larger groups.
- LD2111.5: Assess and analyze the importance of ethical behavior in professional life as well as in building a sustainable society.

Course					Co	rrelatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
LD2111.1	3														
LD2111.2	3														
LD2111.3		3													
LD2111.4												3	2		
LD2111.5		2	2	3											
Average	1.20	1.00	0.40	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.40	0.00	0.00

Course Code: MA2101

Course Name: Introduction to Marketing

Course Outcomes: After course completion, the student will be able to

MA2101.1: understand basic marketing concepts bucketed into four main topics - branding, customer-centricity, go-to-market strategies and effective brand communications strategies.

MA2101.2: ob	tain a more	in-depth	understanding	of the	subject
1011 12 10 1.2. 00	tuni u more	m depm	anacistanaing	or the	Subject

Course					Co	rrelatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2101.1	1	2			3					2					
MA2101.2	2	1			2		2				2			2	
Average	1.50	1.50	0.00	0.00	2.50	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00

### **Trimester-II**

Course Code: BS2101

Course Name: Fundamentals of Human Resource Management

Course Outcomes: After course completion, the student will be able to

BS2101.1: Critique the impact of external environment on the enterprise's HR system.

BS2101.2: Evaluate the connect between business and HR deliverables

BS2101.3: Identify contemporary issues in HRM and change in human resource practices with changing business environment.

BS2101.4: Analyze the application of HR concept and tools in a case setting.

Course					C	orrelat	ion wi	th prog	gram o	outcom	es			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	la	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	6a	6b
BS2101.1	2	2												
BS2101.2	2				2			2						
BS2101.3	2	2					1	2						
BS2101.4					3									
Average	1.50	1.00	0.00	0.00	1.25	0.00	0.25	1.00	0.00	0.00	0.00	0.00	0.00	0.00

Course Code: CC2105

Course Name: Design Thinking

- CC2105.1: have an understanding of design thinking methodology and its application in businesses.
- CC2105.2: Convergent, divergent and Visual thinking in context of design thinking.
- CC2105.3: Empathy and ethnography in the context of design thinking and design thinking resource.
- CC2015.4: Exposure to diverse design thinking approaches (IDEO: Human Centered Design, D School, Double Diamond).
- CC2015.5: Visualization, mind mapping, value chain, rapid prototyping.

Course					Co	rrelatio	on wit	h prog	gram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
CC2105.1	3				3										
CC2105.2	2					2									
CC2105.3				2						3					
CC2105.4							3	2							
CC2105.5						3									
Average	0.57	0.00	0.00	0.29	0.29	0.29	0.29	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00

Course Code: CC2112

Course Name: Critical Thinking and Storytelling

Course Outcomes: After course completion, the student will be able to

CC2112.1: Define Critical Thinking, its applications and the methods to think critically

CC2112.2: Formulate intelligent questions to investigate.

CC2112.3: Articulate the impact of narratives and examine them critically.

CC2112.4: Distinguish between facts, assumptions and opinion

Course					C	orrelat	ion wi	th prog	gram o	utcom	es			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	ба	6b
CC2112.1	1				3					2				
CC2112.2	2									2	2			
CC2112.3	2				2		2			1	1			
CC2112.4	2						2			2				
Average	1.75	0.00	0.00	0.00	1.25	0.00	1.00	0.00	0.00	1.75	0.75	0.00	0.00	0.00

Course Code: ED2104

Course Name: Entrepreneurial Mindset and Problem Identification

- ED2104.1: improve upon the students' existing strengths as learners and potential corporate/entrepreneurial leaders and address their weaknesses.
- ED2104.2: build the 21st century skill set of "Forever Learning" and collaborate with their peers in an inclusive atmosphere towards entrepreneurial success.
- ED2104.3: hone their creative ideation and problem solving skills by giving them conceptual knowledge supplemented with activities and assignments to work on the same.
- ED2104.4: build a skill of identifying problems as opportunities and undertaking field specific research activities towards building a valuable product/service.

Course					С	orrela	tion v	vith pi	ogram	outco	mes				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ED2104.1	2												3		
ED2104.2	3													3	1
ED2104.3					2					2					
ED2104.4										2				2	2
Average	1.25	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.75	1.25	0.75

Course Code: EP2103

Course Name: Macro Economics

- EP2103.1: Describe the different concepts, tools and techniques of macroeconomic analysis and how the economy functions as a whole.
- EP2103.2: Analyse various macroeconomic variables and their interdependence and interrelation with each other like income, saving, consumption, investment, money, rate of interest and multiplier etc.
- EP2103.3: Reason out the basic problems of an economy which have been faced by the countries and policy makers over time like achieving high rate of growth, controlling inflation, preventing business cycles and solving problems of unemployment.
- EP2103.4: Interpret monetary policy and Fiscal policy in Indian context.
- EP2103.5: Evaluate and compare the economies of developing and developed countries with respect to certain key macro-economic variables such as inflation, exchange rate, BOT and BOP, Employment.

Course					Co	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
EP2103.1	2				3		2	2	3						
EP2103.2					3		2	3	1						
EP2103.3							2	2		2			2		
EP2103.4					2			3		2					
EP2103.5					2		2	2	2						
Average	0.40	0.00	0.00	0.00	2.00	0.00	1.60	2.40	1.20	0.80	0.00	0.00	0.40	0.00	0.00

Course Code: FA2102

Course Name: Introduction to Corporate Finance

- FA2102.1: Understand the role of the finance function in a modern corporation and key financial decisions: investment, financing and dividend
- FA2102.2: Understand fundamentals of valuation of bonds and stocks (the financial obligations of the firm), based on economic profit and cash flows
- FA2102.3: Understand Capital budgeting techniques and decision making
- FA2102.4: Calculate Risk and return (valuation under uncertainty)
- FA2102.5: Understand Significance of Capital Structure
- FA2102.6: Understand Basics of derivative products

Course Outcome	PO	PO	PO	PO	Cor	rrelatio	on wit	h prog PO	gram o	utcom	es PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	ба	6b
FA2102.1	2		2		2	2									
FA2102.2	2	2     2     2     2     2       2     2     2     2     2													
FA2102.3			2		3	3	3		2	2	3				
FA2102.4	1				2	2	2			2	2				
FA2102.5					2	2	2			2					
FA2102.6					2	2									
Average	0.83	0.00	0.67	0.00	2.17	1.83	1.50	0.33	0.67	1.00	0.83	0.00	0.00	0.00	0.00

Course Code: ID2112

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Course Name: Data Analysis for Decisions

Course Outcomes: After course completion, the student will be able to

ID2112.1: Formulate hypotheses and collect data for testing of hypotheses.

ID2112.2: Test hypotheses using various parametric and non-parametric statistical tests.

ID2112.3: Apply simple and multiple regression techniques to predict unknowns.

Course	Correlation with program outcomes														
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ID2112.1	2		1		1		2								2
ID2112.2	1				1			1							
ID2112.3			2			1	1			1					
Average	1.00	0.00	1.00	0.00	0.67	0.33	1.00	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.67

Course Code: OP2102

Course Name: Introduction to Production and Operations Management

- OP2102.1: Demonstrate an understanding of production as a process of converting or transforming resources into products.
- OP2102.2: Demonstrate an understanding of productivity measures, quality and costs both, direct and indirect; understand how to measure process efficiency and effectiveness.
- OP2102.3: Understand the link between process characteristics and other strategic choices.
- OP2102.4: Apply tools and techniques for analysis of Production Scenarios.
- OP2102.5: Understand basics of tools and techniques presented by Operations

Course					Cor	rrelatio	on wit	h prog	gram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	la	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
OP2102.1	2		1			1	1	1		2	2	2		2	
OP2102.2	1	2	2		1		1	1		1	1				
OP2102.3	1				1		1					1			
OP2102.4					1			1		1					
OP2102.5					1			1		1					
Average	0.80	0.40	0.60	0.00	0.80	0.20	0.60	0.80	0.00	1.00	0.60	0.60	0.00	0.40	0.00

Course Code: MA2105

Course Name: Digital Marketing and Communication

Course Outcomes: After course completion, the student will be able to

MA2105.1: Understand the changes that the advent of digital technologies have brought about in the practice of Marketing (the 4 Ps), why and how

MA2105.2: Broadly understand the process and channels involved in the practice of digital marketing (Promotion "P")

MA2105.3: Understand the importance and use of data that drives digital marketing

Course					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2105.1	2				3										
MA2105.2	2				2									1	
MA2105.3			1					1	1	1				1	
Average	1.33	0.00	0.33	0.00	1.67	0.00	0.00	0.33	0.33	0.33	0.00	0.00	0.00	0.67	0.00

### **Trimester-III**

Course Code: BS2102

Course Name: Organizational Behavior

Course Outcomes: After course completion, the student will be able to

BS2102.1: Analyze five conceptual anchors of organizational Behavior

BS2102.2: Appreciate the multiple dimensions of individual variations in Human behavior.

BS2102.3: Interpret organizational problems in terms of individual, interpersonal and group processes.

BS2102.4: Analyze management issues as related to organizational behavior

BS2102.5: Explain the impact of culture on organizational behavior.

Course					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
BS2102.1	2				2			3							
BS2102.2					3			2				3			
BS2102.3	2			2								3			
BS2102.4					1	2									
BS2102.5											2				
Average	0.80	0.00	0.00	0.40	1.20	0.40	0.00	1.00	0.00	0.00	0.40	1.20	0.00	0.00	0.00

Course Code: MA2111

Course Name: Marketing Research

Course Outcomes: After course completion, the student will be able to

MA2111.1: Understand consumers and trade customers, which is essential for taking appropriate marketing decisions for any marketing professional.

MA2111.2: Equip themselves with the understanding of marketing research tools and techniques so that they can use it as an aid to marketing decision making

Course Outcome					Co	rrelatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2111.1	2				2										
MA2111.2	2				2		2	1		1					2
Average	2.00	0.00	0.00	0.00	2.00	0.00	1.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00

Course Code: ID2101

Course Name: Business and Intelligent Machines

- ID2101.1: Discuss insightfully role of Artificial Intelligence, Machine Learning, IoT, Robotics and Data science in design and development of Intelligent Machines
- ID2101.2: Use Weka for Clustering, Classification and Prediction
- ID2101.3: Consider the opportunities and challenges brought about by Intelligent automation
- ID2101.4: Analyze case studies pertaining to application of Intelligent Machines in business
- ID2101.5: Propose and Evaluate use-cases involving Artificial Intelligence, IoT, Robotics and Automation considering economic, social, sustainability and ethical aspects

Course					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ID2101.1	1														
ID2101.2									2						
ID2101.3		2													
ID2101.4									1	1	1				
ID2101.5							1		1	1	1				
Average	0.20	0.40	0.00	0.00	0.00	0.00	0.20	0.00	0.80	0.40	0.40	0.00	0.00	0.00	0.00

Course Code: ED2105

Course Name: Problem Ideas and Concept

- ED2105.1: Develop the ability to understand and analyse the various aspects of entrepreneurship.
- ED2105.2: Learn to ideate, design, market and pitch products or services to the right audience.
- ED2105.3: Apply concepts such as design thinking, value proposition and business model in replication of the entrepreneurial process.
- ED2105.4: Learn to define and communicate a business concept and fine tune their presentation skills.
- ED2105.5: Learn how to identify new opportunities as well as understand myriad marketing and venture development strategies and Go-To-Market strategies

Course					Co	rrelatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ED2105.1	3				3									2	
ED2105.2					2					3				3	2
ED2105.3					3									3	3
ED2105.4					2						3				
ED2105.5					3			2						3	3
Average	0.60	0.00	0.00	0.00	2.60	0.00	0.00	0.40	0.00	0.60	0.60	0.00	0.00	2.20	1.60

Course Code: CC2201

Course Name: Perspectives on Contemporary Issues

Course Outcomes: After course completion, the student will be able to

CC2201.1: Identify different perspectives objectively.

CC2201.2: Explain interconnectedness of the issues and their impact at micro and macro levels.

CC2201.3: Recognize their own beliefs, biases, claims and assumptions.

CC2201.4: Evaluate sources, argue and defend effectively

Course					Co	orrelati	on wit	h prog	gram o	utcom	es			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	6a	6b
CC2201:1	3	2								2				
CC2201:2	2									3	2			
CC2201:3	3									2				
CC2201:4	3						2				2			
Average	2.75	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.00	1.75	1.00	0.00	0.00	0.00

Course Code: ID2113

Course Name: Business Modeling using Excel

Course Outcomes: After course completion, the student will be able to

ID2113.1: Understand and appreciate the role of data analytics in creating value for business.

ID2113.2: Model structured decision-making situations in various functional domains.

ID2113.3: Perform sophisticated data analysis using Microsoft Excel.

Course					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ID2113.1	2				2				2	1					
ID2113.2	2				2		2	2		1					
ID2113.3	1	1						1	2						
Average	1.67	0.33	0.00	0.00	1.33	0.00	0.67	1.00	1.33	0.67	0.00	0.00	0.00	0.00	0.00

Course Code: PW2101 Course Name: Capstone-I Course Outcomes: After course completion, the student will be able to PW2101.1: Increasing student's motivation and engagement through increased academic rigor

- PW2101.2: Enhancing a student's educational and career aspirations
- PW2101.3: Boosting student's confidence, self-perception and self-esteem
- PW2101.4 Providing a platform for demonstrating learning and proficiency in the acquisiti on of knowledge and skills

Course					Co	relatio	on wit	h prog	gram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
PW2101.1	2									2	2				
PW2101.2	2														
PW2101.3	2											2	2		
PW2101.4					3	3	3	3	2	2	3	3			
Average	1.50	0.00	0.00	0.00	0.75	0.75	0.75	0.75	0.50	1.00	1.25	1.25	0.50	0.00	0.00

Course Code: LS2104 Course Name: Law & Citizenship Course Outcomes: After course completion, the student will be able to

LS2104.1: Equip themselves to fulfill the role of a public-spirited citizen.

LS2104.2: Take the perspective of the citizen, draw on and enrich practical experience, and aim for a combination of facts, values and strategies that work in India

Course Outcome					Со	orrelati	on wi	th pro	gram	outcor	nes				
Outcome	PO 1 o	PO	PO	PO	PO 2	PO 2h	PO 2 a	PO	PO 2	PO 4 c	PO 41-	PO 5 a	PO	PO	PO
	1a	Za	20	2C	3a	30	3C	30	3e	4a	4D	за	30	oa	0D
LS2104.1		2	2		2			2							
LS2104.2							2		2	3	3				
Average	0.67	0.00	1.00	0.67	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.67	0.00	0.00

Course Code: LS2105

Course Name: Filmmaking- Using Creativity to Drive Action

- Course Outcomes: After course completion, the student will be able to
- LS2105.1: Identify the difference between fictional and non-fictional story frames and to identify the elements that differentiate fictional and nonfictional work.
- LS2105.2: Understand the difference between fictional and non-fictional narrative; technicalities of shoot (frame, light and sound); how to build a narrative using 'The Story Spine' tool.
- LS2105.3: Apply the previously explained parameters to their favorite stories to understand how effective storytelling tools work to move people.
- LS2105.4: Understand what is consent; how to take consent; rule of thumb for shoots.

Course					С	orrelat	ion wi	th prog	gram o	outcom	es			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	6a	6b
LS2105.1	2										1			
LS2105.2	2									1	1			
LS2105.3	2										2			
LS2105.4	2										1			
Average	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.25	0.00	0.00	0.00

## **Trimester-IV**

Course Code: MA2201

Course Name: Sales & Channel Management

Course Outcomes: After course completion, the student will be able to

MA2201.1: Understand and appreciate the strategic role of the sales and distribution function

- MA2201.2: Develop an understanding of Go To Market/ Route To Market strategies in distribution and how do they evolve as per company's sales and distribution strategies
- MA2201.3: Understand the drivers and levers impacting various distribution challenges and enhancing field force effectiveness.

Course Outcome					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2201.1	1	2			2										
MA2201.2	1	2	2		2	2					2			1	
MA2201.3	2	2	2		2	2				2	2	1		1	
Average	1.33	2.00	1.33	0.00	2.00	1.33	0.00	0.00	0.00	0.67	1.33	0.33	0.00	0.67	0.00

Course Code: CC2113

Course Name: Communication and Identity

Course Outcomes: After course completion, the student will be able to

CC2113.1: Analyse their personal identities, both private and social

CC2113.2: Identify their different values, strengths and areas of professional interest

CC2113.3: Articulate their personal statement and use it to craft an influential pitch

CC2113.4: Express themselves through various communication formats, on different platforms

Course						Co	rrelati	on wit	h prog	gram o	outcon	nes			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO						
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
CC2113.1	2										3		1		
CC2113.2	2			2		2						2			
CC2113.3	2			2							2		2		
CC2113.4	2				2										
Average	2.00	0.00	0.00	1.00	0.50	0.50	0.00	0.00	0.00	0.00	1.25	0.50	0.75	0.00	0.00

Course Code: ED2201

Course Name: Prototype & Pilot

- ED2201.1: improve upon the students' existing strengths as learners and potential corporate/entrepreneurial leaders and address their weaknesses
- ED2201.2: Empower students and help them learn how to present their ventures and ideas effectively
- ED2201.3: Enable students to learn how to identify new opportunities as well as understand myriad marketing and venture development strategies and Go-To-Market strategies
- ED2201.4: Equip students with technical knowledge around building Pitch Decks

Course Outcome						Correla	ation w	vith pro	ogram o	utcomes	5				
	PO	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	ба	6b
ED2201.1	2				2	2	2	1	1					1	1
ED2201.2		2	1	1	1	1	1	1	1			2	2	2	2
ED2201.3										2	2				
ED2201.4			2	2						2	2	2	2		
Average	0.50	0.50	0.75	0.75	0.75	0.75	0.75	0.50	0.50	1.00	1.00	1.00	1.00	0.75	0.75

#### Course Code: PW2106

Course Name: Business Simulation

Course Outcomes: After course completion, the student will be able to

PW2106.1:	6.1: Develop an appreciation for at decision making in an organization with											
	interconnectedness in the organization											
	(e.g. marketing, finance, industrial design, engineering, HR, production).											
	a. Awareness of the role of multiple functions in creating a new product (e.g											
	marketing, finance, industrial-design, engineering, production).											
	b. Ability to coordinate multiple, interdisciplinary tasks in order to achieve a common objective.											
PW2106.2:	Develop managerial-skills that are budgetary, yet result-oriented in the face of constraints of financial-budgets.											
PW2106.3:	Bet-on Product development, R&D and continuous-improvement of products and organizational processes as matters of utmost importance for the sustainability of any organization (in the organization's context)											
PW2106.4:	Develop Products, Solutions and allied communication need to be culturally, relevant (e.g., Cannot attempt to market meat-products to vegetarian customers)											

PW2106.5: Appreciate an overall organizational perspective in decision-making and how to play a constructive role in decision making.

Course Outcome		Correlation with program outcomes														
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b	
PW2106.1	2	2	2	2			2	2	2							
PW2106.2		2	2	2						2	2	2	2			
PW2106.3							2	2		2	2			2	2	
PW2106.4			2						2	2	2					
PW2106.5					1	1				2	2	2	2			
Average	0.40	0.80	1.20	0.80	0.20	0.20	0.80	0.80	0.80	1.60	1.60	0.80	0.80	0.40	0.40	

Course Code: PW2102

Course Name: Summer Internship

Course Outcomes: After course completion, the student will be able to:

PW2102.1: Apply theoretical concept in live projects.

PW2102.2: Integrate theoretical knowledge with the application of technical and managerial skills involved in professional environment.

PW2102.3: Closely understand and participate in business operations and decision making process.

PW2102.4: Work under the guidance and support of industry mentors to become industry ready professionals.

Course Outcome		Correlation with program outcomes													
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6а	6b
PW2102.1					3	2	3	3	3	2					
PW2102.2				2	3	3	3	3	3						
PW2102.3								2	3	3	2				
PW2102.4				3		2		3				3	2		
Average	0.00	0.00	0.00	1.25	1.50	1.75	1.50	2.75	2.25	1.25	0.50	0.75	0.50	0.00	0.00
Course Name: Product & Brand Management

- MA2211.1: Understanding of the challenges and choices in creating a winning product and managing a portfolio of products (identifying and selecting a product launch opportunity, product design, packaging, pricing, positioning, launch strategy and promotion)
- MA2211.2: Provide students with a working knowledge of the financial aspects of managing a product or portfolio of products
- MA2211.3: How a brand's positioning should be developed, established,
  - protected and evolved and the role of communication programs in the same
- MA2211.4: The process of sustaining and managing a brand's equity over the long term while facing short term business pressure

Course					Co	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2211.1	2	2			2					1					
MA2211.2	2	2			2			2							
MA2211.3	1	1	1		1		1							2	
MA2211.4	2	2	2		2									1	
Average	1.75	1.75	0.75	0.00	1.75	0.00	0.25	0.50	0.00	0.25	0.00	0.00	0.00	0.75	0.00

Course Name: Retail Banking & Operations

Course Outcomes: After course completion, the student will be able to be

Course Code.1: Aware of various facets of retail banking and its operations

Course Code.2: How Fintech is transforming functions across retail banking specifically and financial services in a broader manner

Course					Co	orrelati	on wit	h prog	ram o	utcom	es				
Outcome	PO 1a	PO 2a	PO 2b	PO 2c	PO 3a	PO 3b	PO 3c	PO 3d	PO 3e	PO 4a	PO 4b	PO 5a	PO 5b	РО ба	PO 6b
FA2203.1	2		1		3		1	2							
FA2203.2	2		2		1		2		2	1					
Average	2.00	0.00	1.50	0.00	2.00	0.00	1.50	1.00	1.00	0.50	0.00	0.00	0.00	0.00	0.00

Course Code: OP2211

Course Name: Supply Chain Management

Course Outcomes: After course completion, the student will have able to

OP2211.1: Understand the fundamental concepts and theories of supply chain management.

OP2211.2: Identify and design the better supply chains for an organization.

Course					Cor	rrelatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6а	6b
OP2211.1	2		2	1	2	1	1	1	1		1				
OP2211.2			1	2	1		2			3	2	2	1		
Average	1.00	0.00	1.50	1.50	1.50	0.50	1.50	0.50	0.50	1.50	1.50	1.00	0.50	0.00	0.00

Course Code: BS2104

Course Name: Organization Culture and Change

Course Outcomes: After course completion, the student will be able to

BS2104.1: Describe what organizational culture and it's important for an organization

BS2104.2: Recognize key factors determining organizational culture

BS2104.3: Illustrate their understanding with examples from own experience, research and business environment.

BS2104.4.: Assess whether a culture is weak or strong

BS2104.5: Explain the emotions and dynamics of change

BS2104.6: Identify particular external issues impacting on a businesses' need to change.

Course					(	Correla	tion w	ith pro	gram (	outcom	nes				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
BS2104.1	1				3			2					2		
BS2104.2	1				3			3							
BS2104.3	1							3		3	3				
BS2104.4	1				2		2							1	
BS2104.5	1				3							2			
Average	1.00	0.00	0.00	0.00	1.83	0.00	0.67	1.83	0.00	0.50	0.50	0.33	0.33	0.17	0.00

Course Name: Options, Futures and Risk Management

- FA2205.1: Appreciate various financial risk management concepts and their applications
- FA2205.2: Familiar with the nomenclature of derivative trading and risk management strategies
- FA2205.3: Comprehend the mechanism of hedging by utilizing the futures and options or synthetic derivative

Course Outcome					(	Correla	tion wi	th prog	gram ou	itcomes	8				
	РО	PO	PO	PO	РО	РО	PO	PO	PO	PO	РО	РО	РО	РО	РО
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
FA2205.1	2				1	1	1	2	2			2	2		
FA2205.2			1	1						1	1				
FA2205.3											2	1	1	1	1
Average	0.67	0.00	0.33	0.33	0.33	0.33	0.33	0.67	0.67	0.33	1.00	1.00	1.00	0.33	0.33

## **Trimester-V**

Course Code: ST2102

Course Name: Strategic Management

- ST2102.1: Learn how corporate strategy could be leveraged to achieve the objectives of an organisation under conditions of uncertainty.
- ST2102.2: Learn how corporate strategies lead to sustainable competitive advantage and contribute to with the long-term success of the organisation as a whole.
- ST2102.3: Understand why managing operating strategy is important for organisations, and learn about why and how changes in strategies is important.
- ST2102.4: Understand the various aspects of Strategy

Course Outcome					(	Correla	tion wi	th prog	gram ou	itcome	S				
	РО	РО	РО	РО	РО	РО	РО	РО	PO	РО	РО	РО	РО	РО	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ST2102.1	1	1	1											2	2
ST2102.2				1			2	2		1	1	2	1		
ST2102.3					1	1	1	2	2						2
ST2102.4						2	2								
Average	0.25	0.25	0.25	0.25	0.25	0.75	1.25	1.00	0.50	0.25	0.25	0.50	0.25	0.50	1.00

Course Name: B2B Marketing

Course Outcomes: After course completion, the student will be able to

MA2212.1: develop an appreciation for the significance of B2B marketing and sales scenarios in any business enterprise.

MA2212.2: understand the intricacies of solving managerial problems for Industrial Marketers.

MA2212.3: sensitize the participants regarding the specifics and nuances of B2B, vis-à-vis B2C scenarios.

Course					Co	rrelati	on wit	h prog	gram o	utcom	les				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2212.1	1	2			2										
MA2212.2	1	1			2			2						1	
MA2212.3	2	1			1						1			1	
Average	1.33	1.33	0.00	0.00	1.67	0.00	0.00	0.67	0.00	0.00	0.33	0.00	0.00	0.67	0.00

Course Name: Sales & Marketing of Services

Course Outcomes: After course completion, the student will be able to

MA2213.1: analyse the marketing strategies in services and goods industries.

MA2213.2: understand the intricacies of solving managerial problems for Service Industry Professionals.

Course					Cor	rrelatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2213.1	1				1					1					
MA2213.2		1												2	1
Average	0.50	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	1.00	0.50

Course Name: Essentials of Taxation

Course Outcomes: After course completion, the student will be able to

FA2103.1: Understand the basic concepts of Income Tax and Goods and Service Tax (GST)

FA2103.2: Differentiate between the four avenues of taxation viz. Tax Planning,

Tax Management, Tax Avoidance and Evasion

FA2103.3: Understand the computation of Total Income and Tax liability

Course					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
FA2103.1	1				1										
FA2103.2	1				1	1									
FA2103.3	1				2	1	1								
Average	1.00	0.00	0.00	0.00	1.33	0.67	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Course Code: CC2115

Course Name: Understanding and Managing Conflict

Course Outcomes: After course completion, the student will be able to

CC2115.1: Define a group and explain the stages of group development

CC2115.2: Describe conflict and explain types and causes of conflict

CC2115.3: Use inquiry and advocacy to engage with groups

CC2115.4: Give and receive feedback effectively

CC2115.5: Identify sources of conflict and manage them using difference conflict handling styles

Course						Co	rrelati	on wit	h prog	gram o	outcon	nes			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO						
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6а	6b
CC2115.1	1				3							2			
CC2115.2	1				2							2			
CC2115.3	2				2						2	3	2		
CC2115.4	2											2	2		
CC2115.5	2											3			
Average	1.60	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00	0.00	0.40	2.40	0.80	0.00	0.00

## Course Code: ED2202

Course Name: Business Plan & Pitch

- ED2202.1: understand the target customer and market/sell their product
- ED2202.2: identify the most efficient Sales and Marketing strategies
- ED2202.3: create a Revenue Model of their venture
- ED2202.4: become familiar with business plan and investor pitch
- ED2202.5: equip himself/herself with technical knowledge around building Pitch Decks

Course Outcome						Correla	ation w	ith pro	gram o	utcome	es				
	PO	РО	РО	PO	РО	РО	PO	РО	РО	РО	РО	РО	PO	РО	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ED2202.1	2				2	2	2	2	2						
ED2202.2		1	1	1	1	1	1	1	1			1	1		
ED2202.3			1	1	2			2	2	1	1				
ED2202.4			2	2						2	2				
ED2202.5					1	1	1	1	1					1	1
Average	0.40	0.20	0.80	0.80	1.20	0.80	0.80	1.20	1.20	0.60	0.60	0.20	0.20	0.20	0.20

Course	Code:	ID2180
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Course Name: Mathematical Thinking

Course Outcomes: After course completion, the student will be able to

- ID2180.1: Inductive and deductive reasoning
- ID2180.2: Building a mathematical formulation or a picture in head, about a nonmathematical problem
- ID2180.3: Heightened sensitivity towards understanding logic
- ID2180.4: Abstract thinking about infinitesimally small distances, and theorize on
- thought experiments
- ID2180.5: Idea of randomness
- ID2180.6: Create distorted representation of pictorial figures if asked
- ID2180.7: Tricks to find the important idea amongst all the good and bad ideas bundled up together
- ID2180.8: Basic mathematical literacy to understand some symbolic representation
- ID2180.9: Ability to convert symbols into sentences and the other way round
- ID2180.10: Question and critique on logic
- ID2180.11: Sensitivity for proofs

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- ID2180.12: Perceive the foundational applications of AI, ML
- ID2180.13: Appreciate the nondeterministic nature of this world, alongside powers of numerical precision

Course					(	Correla	tion wi	th prog	gram ou	itcome	s				
Outcome	PO	РО	РО	РО	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
ID2180.1	2				3		1	1		2	2		1		
ID2180.2	2				3		1	2	1						
ID2180.3	2				2				1	2					
ID2180.4	2				2			1	2	3					
ID2180.5									2						
ID2180.6							2			2	2			2	
ID2180.7								1	3	2	2	1		2	
ID2180.8	2				2		2	2	2	2					1
ID2180.9	2				2			1	1	3	2				
ID2180.10	2								1	2		1			
ID2180.11	2				2		2		1	2					
ID2180.12					2			3	3	2		2	1	2	
ID2180.13	2				2		1		2						
Average	1.38	0.00	0.00	0.00	1.54	0.00	0.69	0.85	1.46	1.69	0.62	0.31	0.15	0.46	0.08

Course Name: Financial Market and Services

Course Outcomes: After course completion, the student will be able to

FA2202.1: Appreciate the role of financial markets and dealing with its products.

FA2202.2: Acquainting with working of stock exchanges and settlement process

FA2202.3: Apprehend Financial service sector contribution and role in a well efficient financial system

Course					Co	rrelati	on wi	th pro	gram	outcor	nes				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
FA2202.1		2	2		2			2							
FA2202.2							2		2	3	3				
FA2202.3					3	2	2					2	2		
Average	0.00	0.67	0.67	0.00	1.67	0.67	1.33	0.67	0.67	1.00	1.00	0.67	0.67	0.00	0.00

Course Name: Marketing Analytics

Course Outcomes: After course completion, the student will be able to

- MA2214.1: Develop an understanding and appreciation of Customer and Market Segmentation, in any marketing context
- MA2214.2: How to perform Consumer Preference Studies
- MA2214.3: How to measure Customer Lifetime Value and utilize the same for developing sales strategies
- MA2214.4: Understand the nuances of New Product development decisions
- MA2214.5: To conduct Pricing Analytics and Optimization

And Using techniques and methodology taught in MA2214, students will be able to conduct

- MA2214.6 Descriptive analysis for understanding the various market or customer characteristics
- MA2214.7 Cluster analysis and Segmentation Tools (K-means etc) for Product Segmentation
- MA2214.8 Factor analysis for Customer segmentation
- MA2214.9 Regression techniques for Customer satisfaction through Key Driver analysis and also with an introduction to marketing techniques of forecasting market and consumer tends
- MA2214.10 Perceptual maps for all kinds of segmentation and customer preference pattern studies

Course					(	Correla	tion wi	th prog	ram ou	tcomes	5				
outcome	PO	РО	РО	PO	РО	РО	РО	РО	PO	РО	РО	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2214.1	2				2	2	2	2	2	2	2				
MA2214.2		2			1	1	1	2	2			2	2	2	2
MA2214.3	2									2	2				
MA2214.4			2	2	2	1	1		2					2	2
MA2214.5					1	2	2	2	2			2	2		
MA2214.6			2	2	2	1	1	1	1	2					
MA2214.7	2	2					2		2			2	2		
MA2214.8		2			2			2	2						
MA2214.9					2	2	2	2	2	1	1		2		
MA2214.10			2	2	1	1	1			2	2	2	2		
Average	0.60	0.60	0.60	0.60	1.30	1.00	1.20	1.10	1.50	0.90	0.70	0.80	1.00	0.40	0.40

Course Code: OP2213

Course Name: Quality and Operations Excellence

Course Outcomes: After course completion, the student will be able to learn

OP2213.1: Various quantitative and qualitative tools deployed during operations management.

OP2213.2: The operations management vocabulary used in industry and academics.

OP2213.3: Make operations related decisions under various situations and circumstances.

Course					Co	rrelatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
OP2213.1	1		1		1				2	2	1				
OP2213.2	2		2	1	2	1	2				3	2	1		
OP2213.3				2				1			1	2	2	1	
Average	1.00	0.00	1.00	1.00	1.00	0.33	0.67	0.33	0.67	0.67	1.67	1.33	1.00	0.33	0.00

Course Code: BS2105

Course Name: Acquiring Human Capital

- BS2105.1: Describe the role and activities of human resources management in facilitating the steps required for recruitment and selection of human resources in organizations.
- BS2105.2.: Identify the factors that affect organization's talent planning recruitment and selection.
- BS2105.3: Explain and apply the concept of job design, job analysis, and job descriptions in hiring process.
- BS2105.4: Contribute to the recruitment and selection process.

Course					Co	rrelatio	on wit	h prog	gram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
BS2105.1	1			1	3	3									1
BS2105.2	1					3					2	2			
BS2105.3	1				2			1				2	2		1
BS2105.4	1			1		3			1		1			1	
Average	1.00	0.00	0.00	0.50	1.25	2.25	0.00	0.25	0.25	0.00	0.75	1.00	0.50	0.25	0.50

## Trimester-6

Course Code: ST2203

Course Name: STRATEGY FORMULATION AND IMPLEMENTATION

- ST2203.1: Understand the strategic decisions that organisations make and have an ability to engage in strategic planning.
- ST2203.2: Explain the basic concepts, principles and practices associated with strategy formulation and implementation.
- ST2203.3: Integrate and apply knowledge gained in basic courses to the formulation and implementation of strategy from holistic and multi-functional perspectives.
- ST2203.4: Analyse and evaluate critically real-life company situations and develop creative solutions, using a strategic management perspective.

ST2203.5:	Conduct and	present a credible business	analysis in a team setti	ng
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Course Outcome					(	Correla	tion wi	th prog	ram ou	itcomes	5					
	PO	O PO														
	1a	$\begin{array}{cccccccccccccccccccccccccccccccccccc$														
ST2203.1	1	1a 2a 2b 2c 3a 3b 3c 3d 3e 4a 4b 5a 5b 6a 6b   1 2 2 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2														
ST2203.2		2	2		1	1	1	1	2	1	1			1	1	
ST2203.3			1	2								2	1			
ST2203.4		2	2	2								2	2			
ST2203.5		1	2						2	2	2	2	2			
Average	0.20	1.40	1.80	1.20	0.40	0.40	0.60	0.60	1.20	0.60	0.60	1.60	1.40	0.20	0.20	

Course Name: Advance Topics in Digital Marketing

- MA2203.1: understand topics where outcomes were translated into 'Can do's' for each sub module by way of experiential activities.
- MA2203.2: Create a mind map of ecosystem, map roles & responsibilities, identify the right player to solve a problem, assess impact of more or less.
- MA2203.3: Take notice of levers and their importance, gain first-hand knowledge of impact from differentiated uses. Draw conversion paths. Map levers to ecosystem players. Experience using levers in mock situations.
- MA2203.4: Translate business goals to Digital Marketing (DM) goals, Use SMART technique to set goals. Understand what are briefs & their value, make creative & media brief. Use RACE method to set KPIs
- MA2203.5: Identify the types of measurement parameters in DM, match measurement techniques to conversion paths. Interpret measurement ratios against goals. Compare of impact of speed on measurement.
- MA2203.6: Create campaign themes, do sample linkages between theme visual narrative. Apply copy(copy) to activate MTM, know what adaptations are possible
- MA2203.7: Differentiate between, single, multi & Omni. Understand characteristics of this approach. Relate to components. Design sample omni channel mktg experiences for various categories.

Course					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2203.1	2	1			2	1									
MA2203.2	1						2								
MA2203.3	1	2								2					
MA2203.4			2											2	
MA2203.5						2									
MA2203.6										2	2			2	2
MA2203.7	2	2			3	3	3							2	
Average	0.86	0.71	0.29	0.00	0.71	0.86	0.71	0.00	0.00	0.57	0.29	0.00	0.00	0.86	0.29

Course Code: CC2114

Course Name: Critical Thinking for Decisions at Workplace

Course Outcomes: After course completion, the student will be able to

CC2114.1: Apply techniques of Critical Thinking to analyse organisational problems through positive inquiry

CC2114.2: Describe and analyse appropriate problem-solving and ethical decision-making processes

CC2114.3: Choose the most effective and logical decision among multiple alternatives CC2114.4: Evaluate solutions and anticipate likely risks based on purpose, context and ethics

Course						Co	rrelati	on wit	h proş	gram o	outcon	nes			
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO						
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
CC2114.1	3			2			2				2	2			
CC2114.2	2									2	1	2	2		
CC2114.3	3						2				2	2			
CC2114.4	3						2			2	2	2			
Average	2.75	0.00	0.00	0.50	0.00	0.00	1.50	0.00	0.00	1.00	1.75	2.00	0.50	0.00	0.00

Course Name: Security Analysis and Portfolio Management

Course Outcomes: After course completion, the student will be able to understand

Course Code.1: Various investment options

Course Code.2: Various terms used in investments and security analysis and portfolio management

Course Code.3: Basics of fundamental analysis

Course Code.4: Basics of portfolio management techniques

Course Code.5: Basics of technical analysis

Course					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6а	6b
FA2204.1			3		2		2			2					2
FA2204.2					2										
FA2204.3	2				2		2	2		2		2			2
FA2204.4		2				2			2						2
FA2204.5	2		2		2				2						
Average	0.80	0.40	1.00	0.00	1.60	0.40	0.80	0.40	0.80	0.80	0.00	0.40	0.00	0.00	1.20

Course Name: Cases in Sales & Marketing

Course Outcomes: After course completion, the student will be able to

MA2202.1: Familiarize students with real-life examples of sales and marketing situations in the Indian context.

MA2202.2: Understand the distribution structure of typical B2C industries in India.

MA2202.3: Understand the people dynamics of managing a sales team.

MA2202.4: Revise and re-learn common terminology used in the industry in the areas of sales, marketing, and digital marketing.

Course					Co	rrelati	on wit	h prog	gram o	utcom	les				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
MA2202.1	2	2			2		2								
MA2202.2	2	2			2										
MA2202.3												2		2	
MA2202.4	1	2			2										
Average	1.25	1.5	0	0	1.5	0	0.5	0	0	0	0	0.5	0	0.5	0

## Course Code: BS2106

Course Name: Measurement and Management of Performance Course Outcomes: After course completion, the student will be able to BS2106.1: Clearly understand concepts, theories and practice in industry BS2106.2: Build a sound Performance Measurement and Management system in organizations as they enter working career

Course					Cor	relatio	on wit	h prog	ram o	utcom	es				
Outcome	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1a	2a	2b	2c	3a	3b	3c	3d	3e	4a	4b	5a	5b	6a	6b
BS2106.1		1			2	3		1					1		
BS2106.2		1				3	2							1	
Average	1.00	0.00	0.00	1.00	3.00	1.00	0.50	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00