

LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(UGC Autonomous)

Approved by AICTE | Affiliated to Osmania University | Accredited to NBA, NAAC

Department of Information Technology

Course Outcomes & Course Articulation Matrix

A.Y: 2026-2027

Course Outcomes:

Year / Sem	II/III		
Course Title:	English for Technical Communication	Course Code	U24EN301
Course Outcomes (CO's)	Description		
ETC.CO1	Apply technical communication skills effectively.		
ETC.CO2	Adapt to different types of official correspondence successfully.		
ETC.CO3	Construct a report writing productively using various techniques.		
ETC.CO4	Develop the skills of manual writing adequately.		
ETC.CO5	Interpret the information transfer from verbal to non-verbal data and vice versa completely.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
ETC.CO1	1								3		1		
ETC.CO2						2	1		3		3		
ETC.CO3				3		1			3	1		1	1
ETC.CO4						1			3				
ETC.CO5				1					3		2	2	
Avg	1			2		1.3	1		3	1	3	1.5	1

Course Outcomes:

Year / Sem	II/III		
Course Title:	Digital Electronics and Computer Organization	Course Code	U24EC304
Course Outcomes (CO's)	Description		
DECO.CO1	Demonstrate the number system conversions and simplify Boolean functions.		
DECO.CO2	Analyze and simplify Boolean expressions using Karnaugh maps, tabulation method, and design combinational circuits.		
DECO.CO3	Analyze and design various sequential circuits.		
DECO.CO4	Illustrate the operation of digital computer and understand its organization.		
DECO.CO5	Understand the various memory types.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
DECO.CO1	1	2	2	2	—	2	1	3	3	2	2	2	2
DECO.CO2	1	1	1	1	—	2	2	2	3	2	2	1	1
DECO.CO3	2	3	2	3	1	2	1	2	3	2	2	2	2
DECO.CO4	—	—	—	—	—	—	—	1	2	—	1	—	—
DECO.CO5	1	2	1	2	1	1	1	2	3	1	2	2	2
DECO.Avg	1.3	2.0	1.5	2.0	1.0	1.8	1.2	2.0	2.8	1.8	1.8	1.8	1.8

Course Outcomes:

Year / Sem	II/III		
Course Title:	Mathematics-III(Probability and Statistics)	Course Code	U24MA301
Course Outcomes (CO's)	Description		
M-III.CO1	Analyze and determine Probabilities with respect to Random variables in probability distributions.		
M-III.CO2	Compute the parameters of the Binomial distribution, the Poisson distribution, and the moments.		
M-III.CO3	Calculate the statistical parameters of uniform and exponential probability distributions		
M-III.CO4	Find the parameters related to correlation, regression, sampling Theory with context to test of hypothesis.		
M-III.CO5	Analyze and check the validity of the statement using testing of hypothesis for various parameters and goodness of fit.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
M-III.CO1	3	3	3	3	2							2	2
M-III.CO2	3	3	3	3	2							2	2
M-III.CO3	3	3	3	3	2							2	2
M-III.CO4	3	3	3	3	2							2	2
M-III.CO5	3	3	3	3	2							2	2
M-III.Avg	3	3	3	3	2							2	2

Course Outcomes:

Year / Sem	II/III		
Course Title:	Discrete Mathematics	Course Code	U24CS301
Course Outcomes (CO's)	Description		
DM.CO1	Distinguish between Propositional logic, deriving valid proofs of inference, and checking the validity of inference.		
DM.CO2	Illustrate by examples the basic terminology of sets, relations, functions, and algebraic structures along with their associated operations.		
DM.CO3	Demonstrate the basics of counting, principles of permutations, combinations, applying inclusion /exclusion principle, and pigeonhole methodology in solving counting problems.		
DM.CO4	Demonstrate generating functions, write recurrence relations, and apply various techniques to solve recurrence relations.		
DM.CO5	Transform a problem in computer science and engineering into a graph to solve it efficiently using concepts of graph theory.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
DM.CO1	3	3	2	1	2	-	-	-	-	2	3	3	3
DM.CO2	2	3	-	2	2	-	-	-	-	2	2	3	2
DM.CO3	3	2	2	2	-	-	-	-	-	1	2	3	3
DM.CO4	3	3	3	2	2	-	-	-	-	3	2	2	3
DM.CO5	2	3	1	3	-	-	-	-	-	2	3	2	2
DM.Avg	2.6	2.8	2.0	2.0	2.0	-	-	-	-	2.0	2.4	2.6	2.6

Course Outcomes:

Year / Sem	II/III		
Course Title:	Data Structures	Course Code	U24CS302
Course Outcomes (CO's)	Description		
DS.CO1	Describe data structures, their types, operations, and algorithm performance in terms of time and space complexity.		
DS.CO2	Apply searching and sorting algorithms to solve computational problems and compare their performance.		
DS.CO3	Compute and perform fundamental operations on linear data structures using arrays, stacks, queues, and linked lists.		
DS.CO4	Evaluate linked list variants and hashing techniques with appropriate collision handling methods.		
DS.CO5	Analyse tree and graph data structures using traversal techniques and minimum spanning tree algorithms.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
DS.CO1	3	2	-	-	2	-	-	-	-	-	2	2	2
DS.CO2	3	3	3	-	2	-	-	-	-	-	2	3	3
DS.CO3	3	3	3	-	3	-	-	-	-	-	2	3	3
DS.CO4	3	3	3	-	3	-	-	-	-	-	2	3	3
DS.CO5	3	2	3	-	2	-	-	-	-	-	2	3	3
DS.Avg	3	2.6	2.8	-	2.4	-	-	-	-	-	2	2.8	2.6

Course Outcomes:

Year / Sem	II/III		
Course Title:	Soft Skills and Employability Skills Lab	Course Code	U24EN3L1
Course Outcomes (CO's)	Description		
SS&ESLab.CO1	Apply technical communication skills effectively.		
SS&ESLab.CO2	Successfully adapt to different types of official correspondence.		
SS&ESLab.CO3	Construct a report writing productively using various techniques.		
SS&ESLab.CO4	Develop the skills of manual writing adequately.		
SS&ESLab.CO5	Interpret the information transfer from verbal to non-verbal data and vice versa completely.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
SS&ESLab. CO1						2	1	2	3		1		
SS&ESLab. CO2	1												
SS&ESLab. CO3						1	1	2	3		2	1	
SS&ESLab. CO4							1		3		2		
SS&ESLab. CO5								2	3		1		
SS&ESLab. Avg								2	3		1		

Course Outcomes:

Year / Sem	II/III		
Course Title:	Digital Electronics Lab	Course Code	U24EC3L4
Course Outcomes (CO's)	Description		
DE Lab.CO1	Demonstrate the truth table of various logic gates.		
DE Lab.CO2	Design, test and evaluate various combinational circuits such as adders, subtractors, comparators, multiplexers and demultiplexers.		
DE Lab.CO3	Construct flip-flops, counters and shift registers.		
DE Lab.CO4	Simulate full adder and up/down counters.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
ETC.CO1	3	1	–	–	–	–	–	–	–	–	–	–	1
ETC.CO2	3	2	3	2	2	–	–	–	–	–	1	–	2
ETC.CO3	3	1	3	1	2	–	–	–	–	–	1	–	3
ETC.CO4	3	2	2	3	3	–	–	–	–	–	2	–	3
ETC.Avg	3.0	1.5	2.0	1.5	1.8	–	–	–	–	–	1.0	–	3.0

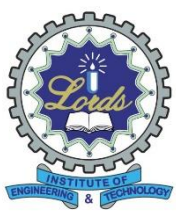
Course Outcomes:

Year / Sem	II/III		
Course Title:	Data Structures Lab	Course Code	U24CS3L2
Course Outcomes (CO's)	Description		
ETC.CO1	Compute searching and sorting operations using appropriate algorithms.		
ETC.CO2	Solve expression processing and data handling problems using stack and queue data structures with arrays.		
ETC.CO3	Operate singly, doubly, and circular linked lists, and perform stack and queue operations using linked lists.		
ETC.CO4	Compute insertion, deletion, searching, and traversal operations using binary search trees and AVL.		
ETC.CO5	Analyze graph traversal and minimum spanning tree algorithms for graph-based problems.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
DSLAb.CO1	3	3	2	2	1	-	-	-	-	2	-	3	3
DSLAb.CO2	3	2	2	2	2	-	-	-	1	2	-	3	3
DSLAb.CO3	3	3	2	2	2	-	-	-	1	2	-	3	3
DSLAb.CO4	3	3	2	2	2	-	-	-	2	1	-	3	3
DSLAb.CO5	3	3	3	3	3	-	-	-	2	2	2	3	3
DSLAb.Avg	3.0	2.8	3.0	2.2	2.2	1.6	-	-	1.2	1.8	2.0	3.0	3.0



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Course Outcomes & Course Articulation Matrix

A.Y: 2026-2027

Course Outcomes:

Year / Sem	III /IV		
Course Title:	Automata Theory, Languages and Computation	Course Code	U24IT501
Course Outcomes (CO's)	Description		
ATLC.CO1	Gain knowledge of the various abstract machines.		
ATLC.CO2	Use regular languages and regular expression for constructing different finite state machines.		
ATLC.CO3	Understand and design different types of grammars.		
ATLC.CO4	Construct Push down Automata.		
ATLC.CO5	Construct Turing Machine.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
ATLC.CO1	3	2	1	2	1	1	-	-	-	-	2	1	2
ATLC.CO2	3	3	1	2	2	1	-	-	-	-	2	2	3
ATLC.CO3	3	2	1	2	3	1	-	-	-	-	1	2	3

ATLC.CO4	3	2	1	2	3	1	-	-	-	-	1	2	3
ATLC.CO5	3	2	1	2	3	1	-	-	-	-	1	2	3
ATLC	3	2.2	1	2	2.4	1	-	-	-		1.4	1.8	2.8

Course Outcomes:

Year / Sem	III /IV		
Course Title:	Embedded Systems & Internet of Things	Course Code	U24IT502
Course Outcomes (CO's)	Description		
ESIoT.CO1	State the Internal architecture and programming of an embedded processor.		
ESIoT.CO2	Interface I/O devices to the processor.		
ESIoT.CO3	Present the Internet of Things (IOT) progress.		
ESIoT.CO4	Use the Arduino and open platform, to construct a small, inexpensive embedded and Internet of Things system.		
ESIoT.CO5	Compute the Internet of Things concept in a practical setting.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
ESIoT.CO1	2	1	-	-	3	-	-	-	1	1	-	2	1
ESIoT.CO2	2	3	3	2	2	-	-	1	2	1	1	3	2
ESIoT.CO3	2	2	-	2	3	-	-	-	1	1	-	3	2
ESIoT.CO4	2	1	2	-	3	-	-	-	1	1	-	2	3
ESIoT.CO5	2	2	3	2	3	1	1	1	2	1	1	2	3
Average	2	1.8	2.6	2	2.8	1	1	1	1.4	1	1	2.4	2.2

Course Outcomes:

Year / Sem	III /IV		
Course Title:	Artificial Intelligence	Course Code	U24CD502
Course Outcomes (CO's)	Description		
AI.CO1	Illustrate basic principles of AI in solutions that require problem solving, search, inference.		
AI.CO2	Demonstrate understanding of steps involved in building of intelligent agents, expert systems, Bayesian networks.		
AI.CO3	Differentiate between learning paradigms to be applied for an application.		
AI.CO4	Demonstrate Expert System and its utilization.		
AI.CO5	Illustrate AI Application Machine Learning & its types.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
AI.CO1	3	2	2	2	3	2	-	-	-	2	3	3	2
AI.CO2	3	3	3	2	2	2	2	-	-	2	-	2	3
AI.CO3	3	2	2	-	-	-	-	-	-	-	-	2	2
AI.CO4	3	2	2	-	-	-	2	-	-	-	-	2	3
AI.CO5	3	2	2	2	2	2	-	-	-	2	3	3	2
Average	3	2.2	2.2	2	2.3	2	2	-	-	2	3	2.4	2.4

Course Outcomes:

Year / Sem	III /IV		
Course Title:	Data Visualization	Course Code	U24CD502
Course Outcomes (CO's)	Description		
DV.CO1	Recall the fundamental concepts, objectives, visualization process, and diverse applications of data visualization.		
DV.CO2	Classify and interpret different data types, data structures, preprocessing techniques, and principles of human perception relevant to data visualization.		
DV.CO3	Analyze visualization foundations and determine appropriate visualization techniques for representing different types of datasets effectively.		
DV.CO4	Apply Matplotlib tools and techniques to develop, customize, and interpret various types of graphical visualizations.		
DV.CO5	Design and create statistical and geospatial visualizations using Seaborn and Folium to support effective data analysis and interpretation.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
DV.CO1	3	2	1	-	2	-	-	-	-	-	1	2	1
DV.CO2	3	3	2	1	2	-	-	-	-	-	1	2	2
DV.CO3	2	3	3	2	3	-	-	-	1	-	1	3	2
DV.CO4	2	2	3	2	3	-	-	-	1	1	1	3	3
DV.CO5	2	2	3	2	3	-	-	-	2	2	1	3	3
Average	3	2	2	2	3	-	-	-	1	2	1	3	2

Course Outcomes:

Year / Sem	III /IV		
Course Title:	Software Engineering	Course Code	U24CD502
Course Outcomes (CO's)	Description		
SE.CO1	Demonstrate knowledge of processes models and usability in problem specific domains.		
SE.CO2	Implement various modelling techniques for elicitation and design techniques to perform architectural analysis for requirements of stakeholders.		
SE.CO3	Assess and work on software quality and metrics by implementing the risk mitigation.		
SE.CO4	Implement software testing techniques and strategies for software validation.		
SE.CO5	Express software configuration and management practices using product metrics and estimation techniques using CMM.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
SE.CO1	3	2	2	-	-	—	—	—	—	-	—	2	2
SE.CO2	2	3	3	2	-	—	—	—	—	-	—	3	3
SE.CO3	2	3	3	2	2	—	—	—	-	-	—	3	3
SE.CO4	2	2	3	3	2	—	—	—	-	-	-	3	2
SE.CO5	3	2	2	3	-	-	—	-	-	-	-	3	3
Average	2.4	2.4	2.6	2.5	2	-	-	-	-	-	-	2.8	2.6

Course Outcomes:

Year / Sem	III /IV		
Course Title:	Embedded Systems & Internet of Things Lab	Course Code	U24IT5L1
Course Outcomes (CO's)	Description		
ES&IoT Lab.CO1	Possess the passion for acquiring programming skills in using different tools.		
ES&IoT Lab.CO2	Able to design and develop embedded systems (hardware, peripherals and firmware).		
ES&IoT Lab.CO3	Write code for different forms of interfacing devices		
ES&IoT Lab.CO4	Develop python programs that run on Raspberry Pi4.		
ES&IoT Lab.CO5	Interface Sensors and Actuators with Raspberry Pi4.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

[illegible]

Course Outcomes:

Year / Sem	III /IV		
Course Title:	Artificial Intelligence Lab	Course Code	U24CD5L2
Course Outcomes (CO's)	Description		
AI.CO1	Develop solutions for informed and uninformed search problems in AI.		
AI.CO2	Apply reasoning in first order logic using Prolog.		
AI.CO3	Apply python libraries to synthesize information and develop supervised learning models.		
AI.CO4	Develop a case study in multidisciplinary areas to demonstrate the use of AI.		
AI.CO5	Analyze and develop real time applications by using AI tools.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
AI.CO1	2	3	2	2	2	-	-	-	-	-	-	-	2
AI.CO2	2	3	2	2	2	-	-	-	-	-	-	-	2
AI.CO3	2	3	2	2	3	2	-	-	-	-	-	1	3
AI.CO4	3	3	3	3	3	3	2	2	2	2	-	2	3
AI.CO5	3	3	3	3	3	2	2	-	2	2	1	2	3
Average	2.4	3.0	2.4	2.4	2.6	1.4	0.8	0.4	0.8	0.8	0.2	1.0	2.6

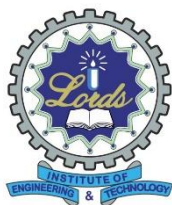
Course Outcomes:

Year / Sem	III /IV		
Course Title:	Data Visualization Lab	Course Code	U24CD4L1
Course Outcomes (CO's)	Description		
DV Lab.CO1	Apply the process of importing and connecting data from different sources into Tableau for analysis.		
DV Lab.CO2	Differentiate between Dimensions and Measures and use them appropriately for data visualization.		
DV Lab.CO3	Develop visualizations by mapping data fields to visual layouts and configuring graphical properties in Tableau.		
DV Lab.CO4	Construct interactive dashboards by linking multiple visualizations to present meaningful insights.		
DV Lab.CO5	Design graphical user interface (GUI)-based dashboards and frames to solve real-world data visualization problems effectively.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
DV Lab.CO1	3	2	1	1	3	–	–	–	–	–	–	3	2
DV Lab.CO2	3	3	2	1	3	–	–	–	–	–	–	3	2
DV Lab.CO3	2	3	3	2	3	–	–	–	1	1	–	3	3
DV Lab.CO4	2	2	3	2	3	–	–	–	2	2	1	3	3
DV Lab.CO5	2	2	3	2	3	–	–	–	2	2	1	3	3
Average	2.4	2.4	2.4	1.6	3.0	–	–	–	1.0	1.0	0.4	3.0	2.6



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Department of Information Technology

Course Outcomes & Course Articulation Matrix

A.Y: 2026-2027

Course Outcomes:

Year / Sem	IV /VII		
Course Title:	Business Economics and Financial Analysis	Course Code	U23MB701
Course Outcomes (CO's)	Description		
BEFA.CO1	Apply the concepts of Business and Economics during their professional and personal life.		
BEFA.CO2	Understand the elasticity of the demand of the product, different types, and measurement of elasticity of demand and factors influencing on elasticity of demand.		
BEFA.CO3	Recognize the Production function, features of Iso-Quants and Iso-Costs, different types of internal economics, external economics and law of returns with appropriate examples.		
BEFA.CO4	Prepare the financial statements of the firm.		
BEFA.CO5	Analyze the financial statements using ratio analysis and cash flow techniques.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
BEFA.CO1	—	2	—	—	—	3	—	—	—	3	1	2	3
BEFA.CO2	—	3	—	—	—	2	—	—	—	1	—	3	2
BEFA.CO3	—	3	—	—	—	2	—	—	—	2	—	3	2
BEFA.CO4	—	—	—	2	—	—	—	—	—	3	—	2	3

BEFA.CO5	–	2	–	3	–	–	–	–	–	3	1	2	3
Average	0.0	2.0	0.0	1.0	0.0	1.4	0.0	0.0	0.0	2.4	0.4	2.4	2.6

Course Outcomes:

Year / Sem	IV/VII		
Course Title:	BIG DATA ANALYTICS	Course Code	U23IT701
Course Outcomes (CO's)	Description		
BDA.CO1	Explain big data and analyze use cases from selected business domains.		
BDA.CO2	Install, configure, and run Hadoop and HDFS		
BDA.CO3	Demonstrate the application of GAN architectures in image generation, style transfer, and image transformation.		
BDA.CO4	Apply the concept of Sharding and Map Reduce with the procedural approach		
BDA.CO5	Evaluate big data and echo system techniques for User Defined Functions in Hive platform.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
BDA.CO1	3	2	2	2	3	1	1	1	1	1	2	3	2
BDA.CO2	3	3	2	3	3	2		2	1	3	1	3	3
BDA.CO3	2	2	1	2	3	1	1	1		1		3	2
BDA.CO4	3	3	2	3	3	2	1	1			3	3	3
BDA.CO5	3	3	2	3	3	2		1	1	2	3	3	3
Average	2.8	2.6	1.8	2.6	3	1.6	1	1.2	1	1.6	2.2	3	2.6

Course Outcomes:

Year / Sem	IV /VII		
Course Title:	Information Security	Course Code	U23IT704
Course Outcomes (CO's)	Description		
IS.CO1	Describe the steps in the Security Systems Development Life Cycle (Sec SDLC) and explain its role in balancing security and access.		
IS.CO2	Analyze common threats, legal and ethical issues, and evaluate their implications on organizational information security policies.		
IS.CO3	Design a security blueprint by applying security frameworks to meet organizational business needs, considering security and risk management principles.		
IS.CO4	Implement and evaluate reactive security solutions, including firewalls, intrusion detection techniques, and other security tools to mitigate security breaches.		
IS.CO5	Demonstrate the use of ethical hacking tools, secure communication protocols, and integrate technical and non-technical aspects in securing organizational information systems.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
IS.CO1	3	2	2	-	2	2	-	2	-	2	2	2	2
IS.CO2	2	3	2	-	-	2	2	2	2	-	-	1	2
IS.CO3	2	3	3	-	3	3	3	2	-	-	2	3	3
IS.CO4	2	2	2	-	2	3	-	-	-	2	-	3	3
IS.CO5	2	2	2	-	2	3	2	2	-	-	3	3	3
Average	2	2	2	-	2	3	2	2	2	2	2	2	3

Course Outcomes:

Year / Sem	IV /VII		
Course Title:	Generative AI	Course Code	U23IT708
Course Outcomes (CO's)	Description		
GAI.CO1	Explain the fundamental concepts, applications, probabilistic foundations, and challenges of Generative AI models		
GAI.CO2	Apply autoencoder-based and autoregressive generative models for representation learning, density estimation, and data generation.		
GAI.CO3	Demonstrate the application of GAN architectures in image generation, style transfer, and image transformation.		
GAI.CO4	Analyse transformer models, GPT fine-tuning, prompt engineering, and Hugging Face frameworks for Generative AI applications.		
GAI.CO5	Apply GPT-3, GPT-3.5, and GPT-4 models to perform content filtering, text classification, and question-answering tasks.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
GAI.CO1	3	2	1	1	1	–	–	–	–	1	–	2	1
GAI.CO2	3	3	2	2	3	–	–	–	–	1	–	3	2
GAI.CO3	3	3	3	2	3	–	–	–	1	1	–	3	3
GAI.CO4	3	3	2	3	3	–	–	–	1	2	1	3	3
GAI.CO5	3	3	3	3	3	1	–	1	2	2	1	3	3
Average	3.0	2.8	2.2	2.2	2.6	0.2	0.0	0.2	0.8	1.2	0.4	2.8	2.4

Course Outcomes:

Year / Sem	IV/VII		
Course Title:	Renewable Energy Resources	Course Code	U23ME708
Course Outcomes (CO's)	Description		
RER.CO1	Describe the classification of energy resources and the current energy scenario in India.		
RER.CO2	Explain the basic concepts of solar energy, including solar thermal applications and photovoltaic systems.		
RER.CO3	Apply the principles of wind energy conversion systems to understand their components and working.		
RER.CO4	Analyze the advantages and limitations of tidal power generation and wave energy systems.		
RER.CO5	Evaluate a solution for biomass conversion processes and biofuel production.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
RER.CO1	3	1	-	-	-	3	2	-	-	-	2	2	1
RER.CO2	3	2	2	1	2	3	2	-	-	-	2	3	2
RER.CO3	3	2	3	2	3	2	-	-	-	-	2	3	3
RER.CO4	2	3	2	2	2	3	2	1	-	-	2	3	3
RER.CO5	3	2	3	2	3	3	2	1	2	2	2	3	3
Average	2.8	2.0	2.5	1.8	2.5	2.8	2.0	1.0	2.0	2.0	2.0	2.8	2.4

Course Outcomes:

Year / Sem	IV/VII		
Course Title:	Web Application Development Lab	Course Code	: U23IT7L1
Course Outcomes (CO's)	Description		
WADL.CO1	Design web pages and validate user inputs using HTML5 built-in form validation features.		
WADL.CO 2	Apply Cascading Style Sheets (CSS) to enhance layout, presentation, and responsiveness of web content.		
WADL.CO 3	Create and process web data using XML and JSON for structured data exchange.		
WADL.CO 4	Implement client-side dynamic behaviour using jQuery.		
WADL.CO 5	Develop web applications using modern JavaScript frameworks and server-side technologies.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
WADL.CO1	3	1	–	2	1	–	–	–	–	–	–	2	–
WADL.CO 2	2	–	–	1	3	–	–	–	–	–	–	1	–
WAD L.CO 3	3	3	2	2	–	–	–	–	–	–	–	–	3
WADL.CO 4	1	3	–	3	1	–	–	–	–	–	–	2	–
WADL.CO 5	–	–	3	–	2	–	–	–	–	–	–	2	3
Average	2.2	2.3	2.5	2	1.7							1.7	3

Course Outcomes:

Year / Sem	IV /VII		
Course Title:	Big Data Analytics Lab	Course Code	: U23IT7L2
Course Outcomes (CO's)	Description		
BDAL.CO1	Explain big data and analyze use cases from selected business domains.		
BDAL.CO2	Install, configure, and run Hadoop and HDFS.		
BDAL.CO3	Apply the concept of Sharding and Map Reduce with the procedural approach		
BDAL.CO4	Analyze map-reduce analytics using Hadoop.		
BDAL.CO5	Evaluate big data and echo system techniques for User Defined Functions in Hive platform.		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO's)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO 1	PSO 2
BDAL.CO1	3	2	2	2	3	1	1	1	1	1	2	3	2
BDAL.CO2	3	3	2	3	3	2		2	1	3	1	3	3
BDAL.CO3	2	2	1	2	3	1	1	1		1		3	2
BDAL.CO4	3	3	2	3	3	2	1	1			3	3	3
BDAL.CO5	3	3	2	3	3	2		1	1	2	3	3	3
Average	2.8	2.6	1.8	2.6	3	1.6	1	1.2	1	1.6	2.2	3	2.6

Course Outcomes:

Year / Sem	IV /VII		
Course Title:	Project Phase-I	Course Code	U23IT7P1
Course Outcomes (CO's)	Description		
PP.I.CO1	Demonstrate the ability to synthesize and apply the knowledge and skills acquired in the academic program to the real-world problems.		
PP.I.CO2	Evaluate different solutions based on economic and technical feasibility		
PP.I.CO3	Effectively plan a project and confidently perform all aspects of project management.		
PP.I.CO4	Demonstrate effective written and oral communication skills		
PP.I.CO5	Prepare the documentation report and perform the presentation of the project work		

Course Articulation Matrix:

Mapping of Course Outcomes (CO) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

Course Outcomes (CO)	Program Outcomes (PO)											Program Specific Outcomes (PSO's)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
PP.I.CO1	3	2	2	-	2	2	-	-	3	-	-	2	2
PP.I.CO2	3	3	2	3	2	-	2	-	3	-	-	-	2
PP.I.CO3	3	3	3	-	3	3	1	2	2	3	2	3	-
PP.I.CO4	3	2	2	3	3	3	3	2	-	-	2	3	3
PP.I.CO5	3	3	3	3	3	3	3	2	3	3	-	3	3
Average	3	2.6	2.5	3	2.6	2.7	2.2	2	2.9	3	2	2.7	2.5