LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY

(UGC Autonomous)

Approved by AICTE | Affiliated to Osmania University | Estd.2003.

Department of Computer Science

Course Outcomes & Course Articulation Matrix

ACADEMIC YEAR: 2026-27

Course Outcomes:

Year / Sem	**IV /VII**		
Course Title:	**Deep Learning**	**Course Code**	**U23CM702**
Course Outcomes (CO's)	**Description**		
DL.CO1	Understand the fundamentals of deep learning.		
DL.CO2	Demonstrate various deep learning algorithms and design neural network.		
DL.CO3	Train and implement a neural network.		
DL.CO4	Implement convolutional neural networks for checking the accuracy.		
DL.CO5	Apply neural networks in various fields.		

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**
DL.CO1	3	1	-	-	-	-	-	-	-	-	1	2	1
DL.CO2	2	3	2	-	2	-	-	-	-	-	1	3	3
DL.CO3	2	2	3	2	3	-	-	1	-	-	1	3	3
DL.CO4	3	1	-	2	2	-	-	-	-	-	1	2	1
DL.CO5	2	3	2	2	3	1	-	1	-	-	2	3	3
Average	**2.4**	**2.0**	**1.4**	**1.2**	**2.0**	**0.2**	**-**	**0.4**	**-**	**-**	**1.2**	**2.6**	**2.2**

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:	Data Warehousing	Course Code:	U23CR704
Course Outcomes (CO's)	Description		
DW.CO1	Demonstrate the concepts, architecture, components, and modern trends of Data Warehousing for decision support systems.		
DW.CO2	Analyze ETL/ELT processes, OLTP and OLAP systems, and evaluate multidimensional analytical models.		
DW.CO3	Apply dimensional modeling techniques to design Star, Snowflake, and Fact Constellation schemas for data warehouse applications.		
DW.CO4	Analyze metadata, data marts, partitioning strategies, and warehouse optimization techniques for efficient data management.		
DW.CO5	Apply system and process management techniques, including tuning, testing, scheduling, backup, and recovery, for efficient data warehouse implementation.		

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
DW.CO1	3	2	1	1	2	–	–	–	–	–	2	3	2
DW.CO2	2	3	2	3	3	1	–	–	–	–	2	3	3
DW.CO3	2	2	3	2	3	–	–	–	–	1	2	3	3
DW.CO4	2	3	2	3	3	1	–	–	–	–	2	3	2
DW.CO5	2	2	2	2	3	1	–	–	–	2	3	3	3
Average	**2.2**	**2.4**	**2.0**	**2.2**	**2.8**	**0.6**	**0.0**	**0.0**	**0.0**	**0.6**	**2.2**	**3.0**	**2.6**

Course Outcomes:

Year / Sem	IV/VII		
Course Title:	**Computer Vision**	**Course Code**	**U23CR706**
Course Outcomes (CO's)	**Description**		
CV.CO1	Understand the core concepts of image formation, radiometry, and geometric camera models.		
CV.CO2	Apply camera calibration, stereo vision reconstruction, and core image processing techniques like filtering and segmentation.		
CV.CO3	Extract and implement advanced image descriptors and feature detectors like SIFT, SURF, and HOG for shape representation.		
CV.CO4	Analyze and apply foundational machine learning principles, including statistical decision theory, clustering, and dimension reduction.		
CV.CO5	Design and build practical computer vision applications using neural networks, gesture recognition, and object tracking 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**
CV.CO1	3	2	2	-	-	-	-	-	-	-	-	2	2
CV.CO2	2	3	3	2	-	-	-	-	-	-	-	3	3
CV.CO3	2	3	3	2	2	-	-	-	-	-	-	3	3
CV.CO4	2	2	3	3	2	-	-	-	-	-	-	3	2
CV.CO5	3	2	2	3	3	-	-	-	-	-	2	3	3
Average	**2.4**	**2.4**	**2.6**	**2.5**	**2.3**	**0**	**0**	**0**	**0**	**0**	**2.0**	**2.8**	**2.6**

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
AVG	**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/VIII		
Course Title:	**Deep Learning Lab**	**Course Code**	: **U23CM7L2**
Course Outcomes (CO's)	**Description**		
DL LAB.CO1	Develop ANN without using Machine Learning/Deep learning libraries.		
DL LAB.CO2	Understand the Training ANN model with back propagation.		
DL LAB.CO3	Develop model for sequence learning using RNN.		
DL LAB.CO4	Develop image classification model using ANN and CNN.		
DL LAB.CO5	Generate a new image with auto-encoder and GAN.		

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**
DL LAB.CO1	3	2	2	1	3	-	-	-	-	-	1	3	2
DL LAB.CO2	2	3	1	2	2	-	-	-	-	-	1	2	3
DL LAB.CO3	3	2	3	2	3	-	-	1	-	-	1	3	3
DL LAB.CO4	3	3	2	3	3	-	-	1	-	-	1	3	3
DL LAB.CO5	3	2	3	2	3	-	-	1	-	-	2	3	3
AVG	**2.8**	**2.4**	**2.2**	**2.0**	**2.8**	**-**	**-**	**0.6**	**-**	**-**	**1.2**	**2.8**	**2.8**

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**	**U23CR7P1**
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
AVG	**3**	**2.6**	**2.5**	**3**	**2.6**	**2.7**	**2.2**	**2**	**2.9**	**3**	**2**	**2.7**	**2.5**