

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ADVANCED DATABASES

COURSE CODE: MDS20107

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Design a data base for a system using E-R data model and Relational Data model.	VI (CREATE)
CO2	CO2: Design logical database with all integrity constraints over relations.	VI (CREATE)
CO3	CO3: Apply normalization steps in database design and removal of data anomalies.	III (APPLY)
CO4	CO4: Extend the characteristics of database transactions	II (UNDERSTAND)
CO5	CO5: Distinguish the different types ofNoSQL databases	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	H	H	H					H	H	S	S	
2	H	H	H	H					H	H	S	H	
3	H	H	S	H					H	H	H	S	
4	S	S	H	S					H	S	S	H	
5	H	H	H	S					S	S	H	S	

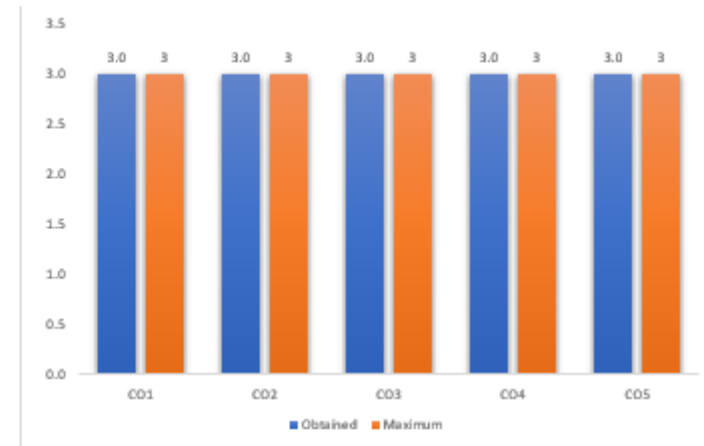
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		External Exam				
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal	pass%	Attainment level	co wise external average	co wise total average
CO1	97.2	3.0			91.7	3.0	100.0	3.0	100.0	3.0	88.9	3.0	3.0	100.0	3.0	3.0	3.0
CO2	97.2	3.0			91.7	3.0			100.0	3.0	88.9	3.0	3.0	100.0	3.0	3.0	3.0
CO3	97.2	3.0	100.0	3.0	91.7	3.0			100.0	3.0	88.9	3.0	3.0	100.0	3.0	3.0	3.0
CO4			100.0	3.0	91.7	3.0			100.0	3.0	88.9	3.0	3.0	100.0	3.0	3.0	3.0
CO5			100.0	3.0	91.7	3.0			100.0	3.0	88.9	3.0	3.0	100.0	3.0	3.0	3.0

AVERAGE	AVERAGE
3	3

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 3	H 3	H 3	H 3				
CO2	H 3	H 3	H 3	H 3				
CO3	H 3	H 3		H 3				
CO4			H 3					
CO5	H 3	H 3	H 3					
AVERAGE OF COS FOR POS	3	3	3	3				
AVERAGE OF POS	3	3	3	3				
AVERAGE	3							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ARTIFICIAL INTELLIGENCE

COURSE CODE: MDS20104

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Defines Artificial Intelligence, State Space, Production Systems	I (REMEMBER)
CO2	CO2: Explains about Heuristic Search Techniques and demonstrates about Knowledge Representation using Predicate Logic.	II (UNDERSTAND)
CO3	CO3: Differentiate between Procedural Knowledge versus Declarative Knowledge and explains about symbolic Reasoning under Uncertainty.	IV (ANALYZE)
CO4	CO4: Compares the various Weak Slot Filler Structures and Strong Slot Filler Structures.	IV (ANALYZE)
CO5	CO5: Constructs the algorithms related to Game Playing and Planning.	VI (CREATE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	S	S	S					S	S	S	S	
2	H	S	S	H					H	S	S	H	
3	H	H	S	S					H	S	S	S	
4	H	H	S	H					H	H	H	H	
5	H	H	H	H					H	H	H	H	

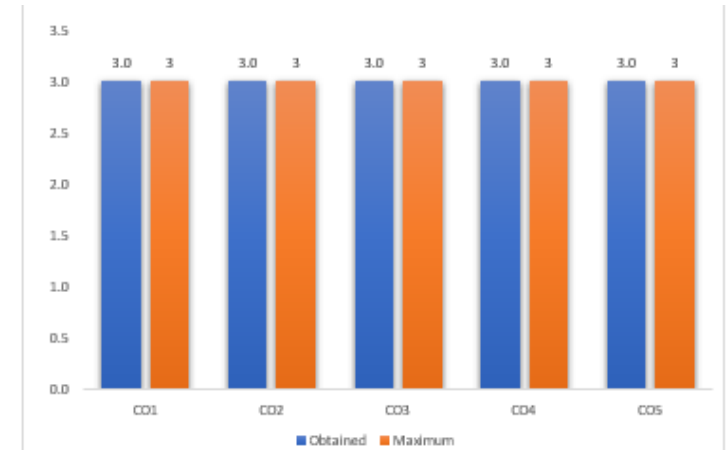
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDENCE		External Exam				
	pass%	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	co wise internal	pass %	Attainment level	co wise external average	co wise total average
CO1	100.0	3.0			97.2	3.0	100.0	3.0	100.0	3.0	86.1	3.0	3.0	100.0	3.0	3.0	3.0
CO2	100.0	3.0			97.2	3.0			100.0	3.0	86.1	3.0	3.0	100.0	3.0	3.0	3.0
CO3	100.0	3.0	100.0	3.0	97.2	3.0			100.0	3.0	86.1	3.0	3.0	100.0	3.0	3.0	3.0
CO4			100.0	3.0	97.2	3.0			100.0	3.0	86.1	3.0	3.0	100.0	3.0	3.0	3.0
CO5			100.0	3.0	97.2	3.0			100.0	3.0	86.1	3.0	3.0	100.0	3.0	3.0	3.0

AVERAGE	AVERAGE
3	3

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1								
CO2	H 3			H 3				
CO3	H 3	H 3						
CO4	H 3	H 3		H 3				
CO5	H 3	H 3	H 3	H 3				
AVERAGE OF COS FOR POS	3	3	3	3				
AVERAGE OF POS	3	3	3	3				
AVERAGE	3							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PYTHON FOR DATA SCIENCE

COURSE CODE: MDS20106

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Apply the concept of operators, variables, expressions, and statements.	III (APPLY)
CO2	CO2: Apply the concept of functions and recursive functions.	III (APPLY)
CO3	CO3: List the operations performed on strings and identify the differences between lists and dictionaries.	I (REMEMBER)
CO4	CO4: Explain Files, Modules, and Packages.	II (UNDERSTAND)
CO5	CO5: Apply the concepts of Inheritance and Polymorphism.	III (APPLY)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	H	S	H					H	H	H	S	
2	H	H	S	H					H	H	H	S	
3	H	H	S	H					H	H	H	S	
4	H	H	S	H					H	H	H	S	
5	H	H	S	H					H	H	H	S	

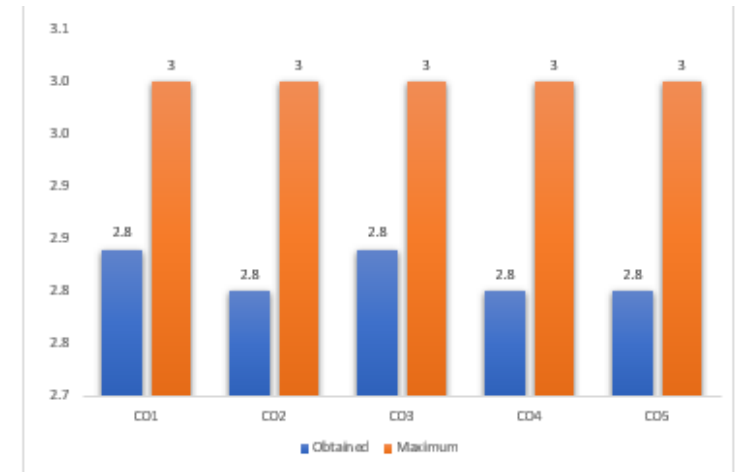
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		External Exam				
	pass%	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	co wise internal	pass %	Attainment level	co wise external average	co wise total
CO1	97.2	3.0			100.0	3.0	100.0	3.0	100.0	3.0	69.4	1.0	2.6	97.2	3.0	3.0	2.8
CO2	97.2	3.0			100.0	3.0			100.0	3.0	69.4	1.0	2.5	97.2	3.0	3.0	2.8
CO3	97.2	3.0	100.0	3.0	100.0	3.0			100.0	3.0	69.4	1.0	2.6	97.2	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	69.4	1.0	2.5	97.2	3.0	3.0	2.8
CO5			100.0	3.0	100.0	3.0			100.0	3.0	69.4	1.0	2.5	97.2	3.0	3.0	2.8

AVERAGE	AVERAGE
3	2.816

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.84	H 2.84		H 2.84				
CO2	H 2.8	H 2.8		H 2.8				
CO3	H 2.84	H 2.84		H 2.84				
CO4	H 2.8	H 2.8		H 2.8				
CO5	H 2.8	H 2.8		H 2.8				
AVERAGE OF COS FOR POS	2.816	2.816		2.816				
AVERAGE OF POS	2.8112	2.8112		2.8112				
AVERAGE	2.8112							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: Mathematics for Data Science

COURSE CODE: MDS20103

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective learning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Construct mathematical arguments that relate to the study of introductory linear algebra.	VI (CREATING)
CO2	CO2: Analyse finite and infinite dimensional vector spaces and subspaces over a field and their properties, including the basis structure of vector spaces.	IV (ANALYZING)
CO3	CO3: Use the definition and properties of linear transformations and matrices of linear transformations and change of basis, including kernel, range, and isomorphism.	III (APPLY)
CO4	CO4: Explain orthogonality on vector spaces and compute inner products and, including Gram-Schmidt orthogonalization.	II (UNDERSTAND)
CO5	CO5: Demonstrate knowledge and understanding of topics including, divisibility, prime numbers, congruence, Diophantine equations.	II (UNDERSTAND)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	H	S	S					H	S	S	S	
2	H	H	H	S					H	S	S	H	
3	H	H	S	H					H	H	H	H	
4	H	H	H	H					H	H	H	H	
5	H	H	S	S					H	H	H	H	

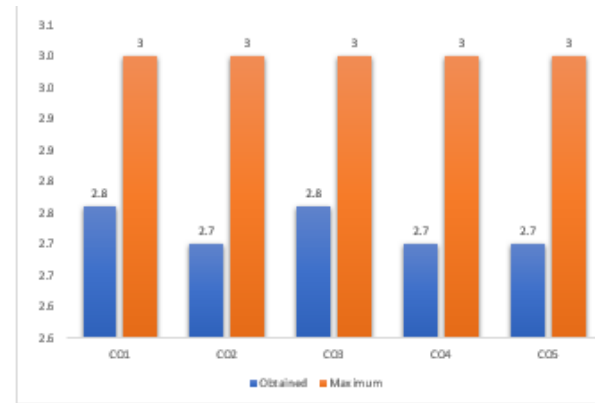
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



CO	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		External Exam				
	pass%	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	co wise internal	pass %	Attainment level	co wise external average	co wise total
CO1	100.0	3.0			66.7	1.0	100.0	3.0	100.0	3.0	80.6	2.0	2.4	91.7	3.0	3.0	2.8
CO2	100.0	3.0			66.7	1.0			100.0	3.0	80.6	2.0	2.3	91.7	3.0	3.0	2.7
CO3	100.0	3.0	100.0	3.0	66.7	1.0			100.0	3.0	80.6	2.0	2.4	91.7	3.0	3.0	2.8
CO4			100.0	3.0	66.7	1.0			100.0	3.0	80.6	2.0	2.3	91.7	3.0	3.0	2.7
CO5			100.0	3.0	66.7	1.0			100.0	3.0	80.6	2.0	2.3	91.7	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.76	H 2.76						
CO2	H 2.7	H 2.7	H 2.7					
CO3	H 2.76	H 2.76		H 2.76				
CO4	H 2.7	H 2.7	H 2.7	H 2.7				
CO5	H 2.7	H 2.7						
AVERAGE OF COS FOR POS	2.724	2.724	2.7	2.73				
AVERAGE OF POS	2.7168	2.7168	2.7	2.73				
AVERAGE	2.7159							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: Data Mining

COURSE CODE: MDS20206

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Implement basic concepts of data mining system	VI (CREATE)
CO2	CO2: To apply the knowledge of data warehouse concepts for real world problems.	III (APPLY)
CO3	CO3: To develop business strategies.	III (APPLY)
CO4	CO4: To compare various supervised learning.	II (UNDERSTAND)
CO5	CO5: To compare various unsupervised learning.	II (UNDERSTAND)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	S	S	S					H	S	S	S	
2	H	H	H	H					H	S	S	H	
3	H	H	H	H					H	H	H	H	
4	H	S	S	H					H	H	H	H	
5	H	H	S	H					H	H	H	H	

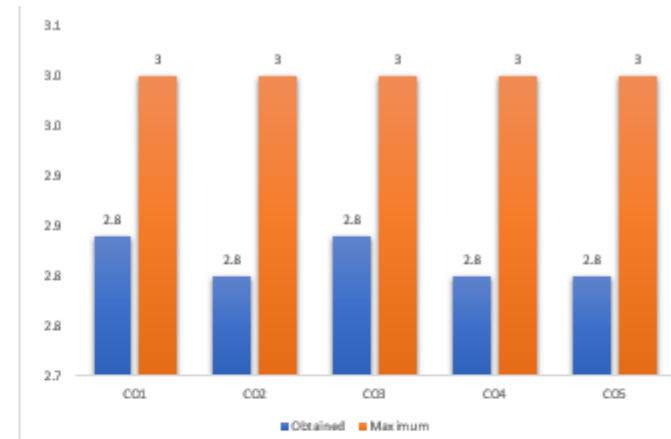
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		External Exam				
	pass%	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	co wise internal	pass %	Attainment level	co wise external average	co wise total
CO1	100.0	3.0			97.2	3.0	100.0	3.0	100.0	3.0	75.0	1.0	2.6	97.2	3.0	3.0	2.8
CO2	100.0	3.0			97.2	3.0			100.0	3.0	75.0	1.0	2.5	97.2	3.0	3.0	2.8
CO3	100.0	3.0	94.4	3.0	97.2	3.0			100.0	3.0	75.0	1.0	2.6	97.2	3.0	3.0	2.8
CO4			94.4	3.0	97.2	3.0			100.0	3.0	75.0	1.0	2.5	97.2	3.0	3.0	2.8
CO5			94.4	3.0	97.2	3.0			100.0	3.0	75.0	1.0	2.5	97.2	3.0	3.0	2.8

AVERAGE	AVERAGE
3	2.816

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1								
CO2	H 2.8	H 2.8	H 2.8	H 2.8				
CO3	H 2.84	H 2.84	H 2.84	H 2.84				
CO4	H 2.8			H 2.8				
CO5	H 2.8	H 2.8		H 2.8				
AVERAGE OF COS FOR POS	2.81	2.813333333	2.82	2.81				
AVERAGE OF POS	2.81	2.8133	2.82	2.81				
AVERAGE	2.813333333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: MACHINE LEARNING

COURSE CODE: MDS20207

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	Define a well-posed learning problem.	II (UNDERSTAND)
CO2	Explain Linear Models	I (REMEMBERING)
CO3	Illustrate the decision tree learning algorithm and hypothesis space search.	III (APPLY)
CO4	Apply K means Algorithm & Genetic algorithms in machine learning	II (APPLY)
CO5	Explain Graphical Models	IV (ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	
1	H		H						S	H			
2			H	H					H	H	S		
3		S	H	S						H	S		
4	S	H		H					H	H		S	
5		H	H	S						H	S		

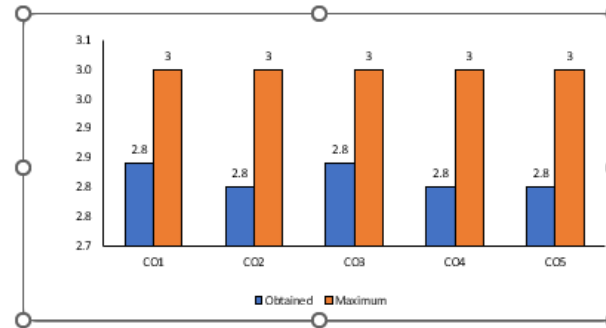
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		co wise internal	External Exam			co wise total
	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment		pass%	Attainment	co wise external	
CO1	97.2	3.0			94.4	3.0	91.7	3.0	100.0	3.0	66.7	1.0	2.6	100.0	3.0	3.0	2.8
CO2	97.2	3.0			94.4	3.0			100.0	3.0	66.7	1.0	2.5	100.0	3.0	3.0	2.8
CO3	97.2	3.0	94.4	3.0	94.4	3.0			100.0	3.0	66.7	1.0	2.6	100.0	3.0	3.0	2.8
CO4			94.4	3.0	94.4	3.0			100.0	3.0	66.7	1.0	2.5	100.0	3.0	3.0	2.8
CO5			94.4	3.0	94.4	3.0			100.0	3.0	66.7	1.0	2.5	100.0	3.0	3.0	2.8

AVERAGE	AVERAGE
3	2.816

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the REGULARITY needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

1. Copy the completed table 1.
2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]
3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.84		H 2.84					
CO2			H 2.8	H 2.8				
CO3			H 2.84					
CO4		H 2.8		H 2.8				
CO5		H 2.8	H 2.8					
AVERAGE OF COS FOR POS	2.84	2.8	2.82	2.8				
AVERAGE OF POS	2.84	2.8	2.815	2.8				
AVERAGE	2.81375							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DATA STORAGE TECHNOLOGIES & NETWORKING

COURSE CODE: MDS20204A

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Explain how to manage the capacity, performance, and reliability of large numbers of disks.	II (UNDERSTAND)
CO2	CO2: Learn how Intelligent Storage Systems provide highly optimized I/O processing capabilities.	I (REMEMBER)
CO3	CO3: Understands importance of NAS and identify how NAS improves the performance.	II (UNDERSTAND)
CO4	CO4: Compare object-based storage and unified based storage	II (UNDERSTAND)
CO5	CO5: Apply to organizations for an effective and cost-efficient disaster recovery and restart procedures in both physical and virtual environments.	III (APPLY)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	S	S	H					S	H	S	S	
2	H	H	H	H					S	S	S	S	
3	H	H	H	H					S	H	S	S	
4	S	S	H	S					S	S	H	H	
5	H	H	H	H					H	H	H	H	

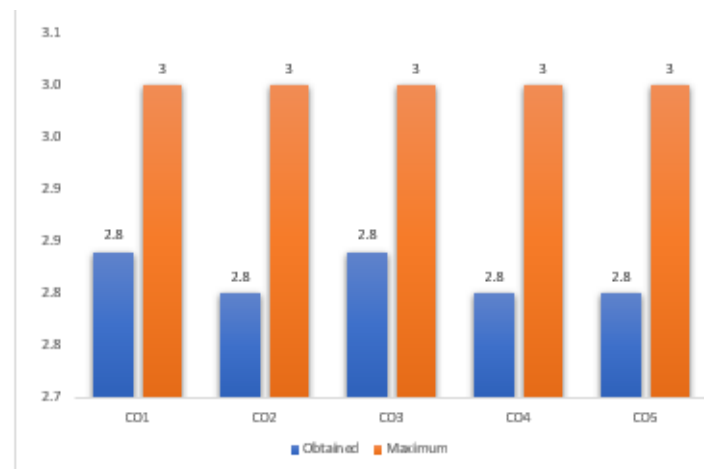
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDENCE		External Exam				
	pass%	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	co wise internal	pass %	Attainment level	co wise external average	co wise total
CO1	100.0	3.0			95.8	3.0	100.0	3.0	100.0	3.0	70.8	1.0	2.6	91.7	3.0	3.0	2.8
CO2	100.0	3.0			95.8	3.0			100.0	3.0	70.8	1.0	2.5	91.7	3.0	3.0	2.8
CO3	100.0	3.0	100.0	3.0	95.8	3.0			100.0	3.0	70.8	1.0	2.6	91.7	3.0	3.0	2.8
CO4			100.0	3.0	95.8	3.0			100.0	3.0	70.8	1.0	2.5	91.7	3.0	3.0	2.8
CO5			100.0	3.0	95.8	3.0			100.0	3.0	70.8	1.0	2.5	91.7	3.0	3.0	2.8

AVERAGE	AVERAGE
3	2.816

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	P01	P02	P03	P04	P05	P06	P07	P08
CO1				H 2.84				
CO2	H 2.8	H 2.8	H 2.8	H 2.8				
CO3	H 2.84	H 2.84	H 2.84	H 2.84				
CO4			H 2.8					
CO5	H 2.8	H 2.8	H 2.8	H 2.8				
AVERAGE OF COS FOR POS	2.813333333	2.813333333	2.81	2.82				
AVERAGE OF POS	2.81333	2.81333333	2.81	2.815				
AVERAGE	2.812916667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DATA SECURITY & PRIVACY

COURSE CODE: MDS20204B

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Apply the need of computer security.	III (APPLY)
CO2	CO2: Identify the differences between different types of ciphers.	III (APPLY)
CO3	CO3: Explain various features of digital signature.	II (UNDERSTAND)
CO4	CO4: Identify the differences between cryptographic hash functions.	IV (ANALYZE)
CO5	CO5: Understand the features of steganography.	II (UNDERSTAND)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	S	H	H					H	H	S	S	
2	H	S	H	H					H	H	S	S	
3	H	S	H	H					H	H	S	S	
4	H	S	H	H					H	H	S	S	
5	H	S	H	H					H	H	H	S	

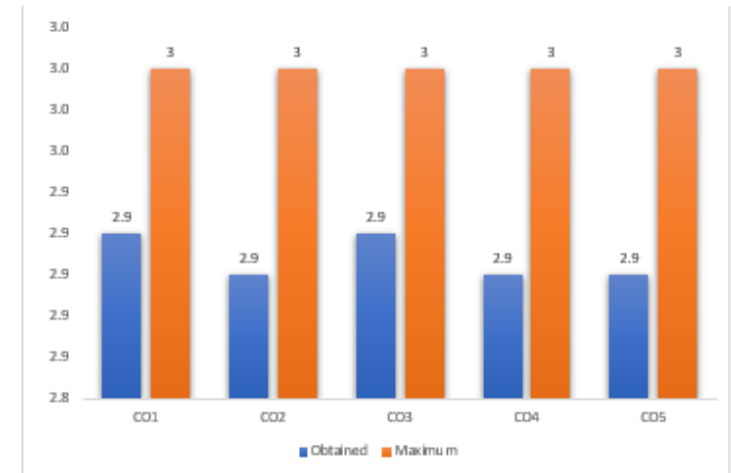
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		External Exam				
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	83.3	2.0	2.8	100.0	3.0	3.0	2.9
CO2	100.0	3.0			100.0	3.0			100.0	3.0	83.3	2.0	2.8	100.0	3.0	3.0	2.9
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	83.3	2.0	2.8	100.0	3.0	3.0	2.9
CO4			100.0	3.0	100.0	3.0			100.0	3.0	83.3	2.0	2.8	100.0	3.0	3.0	2.9
CO5			100.0	3.0	100.0	3.0			100.0	3.0	83.3	2.0	2.8	100.0	3.0	3.0	2.9

AVERAGE	AVERAGE
3	2.908

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.92		H 2.92	H 2.92				
CO2	H 2.9		H 2.9	H 2.9				
CO3	H 2.92		H 2.92	H 2.92				
CO4	H 2.9		H 2.9	H 2.9				
CO5	H 2.9		H 2.9	H 2.9				
AVERAGE OF COS FOR POS	2.908		2.908	2.908				
AVERAGE OF POS	2.9056		2.9056	2.9056				
AVERAGE	2.9056							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: BIG DATA ANALYTICS

COURSE CODE: MDS21306

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Able to understand the Big Data concepts in real time scenario.	II (UNDERSTAND)
CO2	CO2: Understand the architecture of Hadoop and apply map reduce concepts.	II (UNDERSTAND)
CO3	CO3: Understanding Hadoop YARN Architecture	II (UNDERSTAND)
CO4	CO4: Understand and exploring HIVE.	II (UNDERSTAND)
CO5	CO5: Analyzing Data with PIG.	IV (ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	H	H	H					H	S	S	H	
2	H	H	H	H					H	H	H	S	
3	H	H	H	H					H	H	H	S	
4	H	H	H	H					H	H	H	H	
5	H	H	H	H					H	H	H	S	

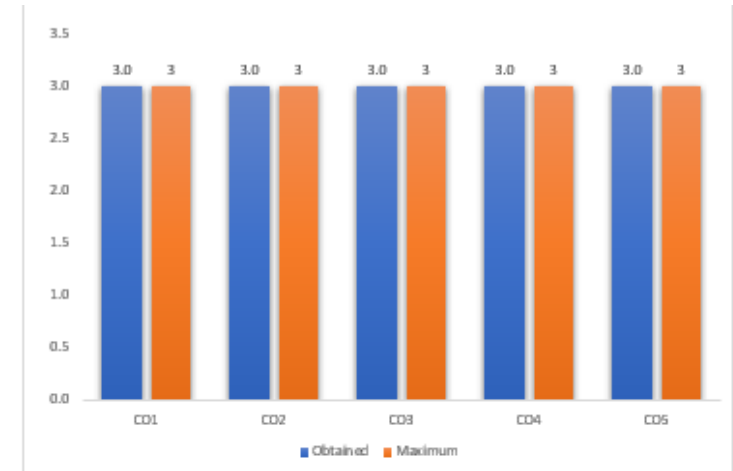
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		External Exam				
	pass%	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	pass %	Attainment level	co wise internal	pass %	Attainment level	co wise external average	co wise total
CO1	96.9	3.0			100.0	3.0	100.0	3.0	100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0
CO2	96.9	3.0			100.0	3.0			100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0
CO3	96.9	3.0	100.0	3.0	100.0	3.0			100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0
CO4			100.0	3.0	100.0	3.0			100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0
CO5			100.0	3.0	100.0	3.0			100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0

AVERAGE	AVERAGE
3	3

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 3	H 3	H 3	H 3				
CO2	H 3	H 3	H 3	H 3				
CO3	H 3	H 3	H 3	H 3				
CO4	H 3	H 3	H 3	H 3				
CO5	H 3	H 3	H 3	H 3				
AVERAGE OF COS FOR POS	3	3	3	3				
AVERAGE OF POS	3	3	3	3				
AVERAGE	3							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DEEP LEARNING

COURSE CODE: MDS21303

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Learn the fundamental principles of deep learning.	II (UNDERSTAND)
CO2	CO2: Identify the deep learning algorithms for various types of learning tasks in various domains.	III (APPLY)
CO3	CO3: To explore Deep learning techniques and various feature extraction strategies.	V (EVALUATE)
CO4	CO4: To mathematically understand the deep learning approaches and paradigms.	II (UNDERSTAND)
CO5	CO5: Implement deep learning algorithms and solve real-world problems	III (APPLY)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	S	H	H					H	S	S	S	
2	H	H	S	H					H	S	S	S	
3	H	H	H	H					H	H	H	H	
4	H	H	H	H					H	H	H	S	
5	H	H	H	H					S	H	H	H	

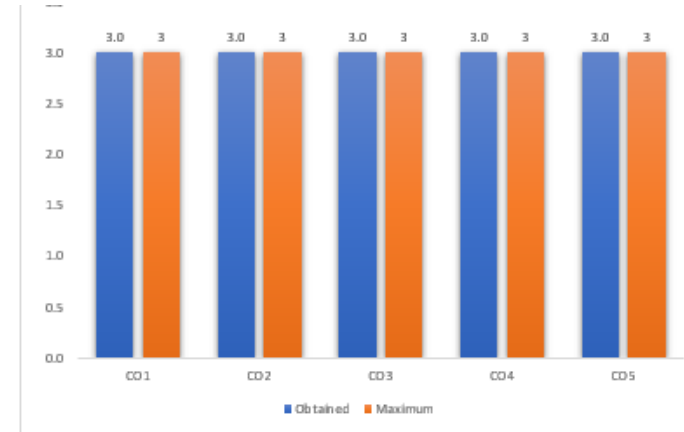
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		co wise internal average	External Exam		co wise total average	
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level		pass%	Attainment level		
CO1	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0
CO2	100.0	3.0			100.0	3.0			100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0
CO4			100.0	3.0	100.0	3.0			100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0
CO5			100.0	3.0	100.0	3.0			100.0	3.0	93.8	3.0	3.0	100.0	3.0	3.0	3.0

AVERAGE	AVERAGE
3	3

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 3		H 3	H 3				
CO2	H 3	H 3		H 3				
CO3	H 3	H 3	H 3	H 3				
CO4	H 3	H 3	H 3	H 3				
CO5	H 3	H 3	H 3	H 3				
AVERAGE OF COS FOR POS	3	3	3	3				
AVERAGE OF POS	3	3	3	3				
AVERAGE	3							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: INTERNET OF THINGS

COURSE CODE: MDS21305

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Identify the importance of IOT and its applications.	III (APPLY)
CO2	CO2: Differentiate between IOT and M2M, SDN and NFV	IV (ANALYZE)
CO3	CO3: Apply IOT design methodology.	III (APPLY)
CO4	CO4: Understand building of IOT devices and Raspberry PI.	II (UNDERSTAND)
CO5	CO5: Explain working of application of IOT.	II (UNDERSTAND)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	H	H	H					S	S	S	S	
2	H	H	H	H					S	S	S	H	
3	H	H	S	H					S	H	H	S	
4	H	H	H	H					H	H	H	S	
5	H	H	H	H					H	H	H	H	

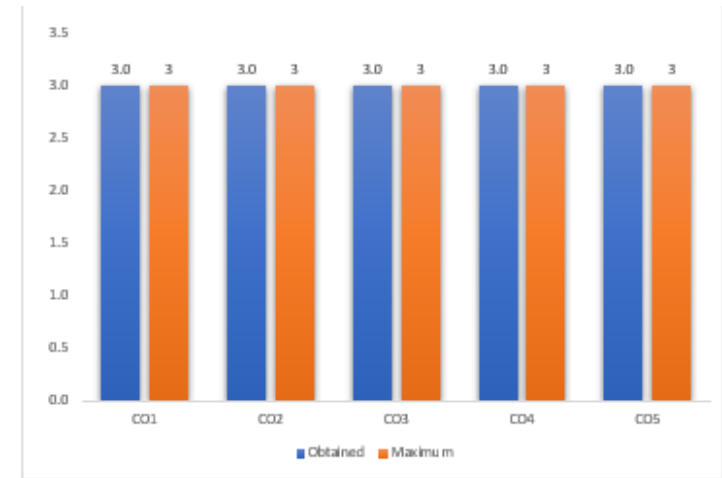
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDENCE		External Exam					
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average	
CO1	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	87.5	3.0	3.0	100.0	3.0	3.0	3.0	3.0
CO2	100.0	3.0			100.0	3.0			100.0	3.0	87.5	3.0	3.0	100.0	3.0	3.0	3.0	3.0
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	87.5	3.0	3.0	100.0	3.0	3.0	3.0	3.0
CO4			100.0	3.0	100.0	3.0			100.0	3.0	87.5	3.0	3.0	100.0	3.0	3.0	3.0	3.0
CO5			100.0	3.0	100.0	3.0			100.0	3.0	87.5	3.0	3.0	100.0	3.0	3.0	3.0	3.0

AVERAGE	AVERAGE
3	3

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.92		H 2.92	H 2.92				
CO2	H 2.9		H 2.9	H 2.9				
CO3	H 2.92		H 2.92	H 2.92				
CO4	H 2.9		H 2.9	H 2.9				
CO5	H 2.9		H 2.9	H 2.9				
AVERAGE OF COS FOR POS	2.908		2.908	2.908				
AVERAGE OF POS	2.9056		2.9056	2.9056				
AVERAGE	2.9056							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: CLOUD COMPUTING

COURSE CODE: MDS21304A

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective learning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	Illustrate the main concepts, features, challenges, and risks in cloud computing	II (UNDERSTAND)
CO2	Describe virtualization of clusters and Data centers, virtual clusters, and resource management.	I (REMEMBERING)
CO3	Identify the architectures over virtualized data centers.	III (APPLY)
CO4	Explain the core issues of cloud computing such as cloud security and trust management.	II (UNDERSTAND)
CO5	Compare various cloud programming and software environments.	IV (ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	
1	H	H	S	H					S	S	S	S	
2	H	H	S	H					S	S	S	S	
3	H	H	S	H					S	S	S	H	
4	H	H	H	H					S	H	H	H	
5	H	H	H	H					S	H	H	H	

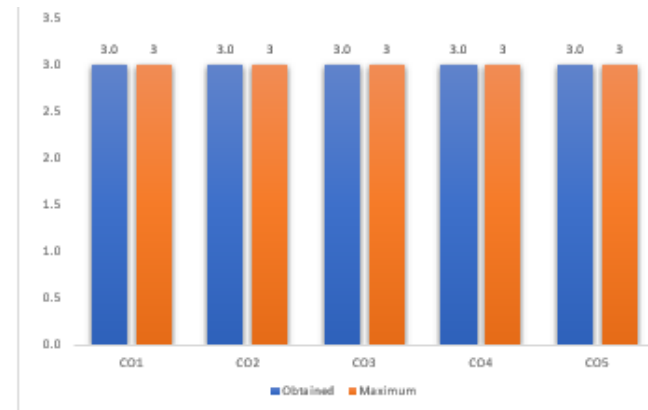
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VWA-VOCE		ATTENDENCE		External Exam				
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	100.0	3.0			91.7	3.0	100.0	3.0	100.0	3.0	91.7	3.0	3.0	100.0	3.0	3.0	3.0
CO2	100.0	3.0			91.7	3.0			100.0	3.0	91.7	3.0	3.0	100.0	3.0	3.0	3.0
CO3	100.0	3.0	100.0	3.0	91.7	3.0			100.0	3.0	91.7	3.0	3.0	100.0	3.0	3.0	3.0
CO4			100.0	3.0	91.7	3.0			100.0	3.0	91.7	3.0	3.0	100.0	3.0	3.0	3.0
CO5			100.0	3.0	91.7	3.0			100.0	3.0	91.7	3.0	3.0	100.0	3.0	3.0	3.0

AVERAGE	AVERAGE
3	3

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

1. Copy the completed table 1.
2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]
3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 3	H 3		H 3				
CO2	H 3	H 3		H 3				
CO3	H 3	H 3		H 3				
CO4	H 3	H 3	H 3	H 3				
CO5	H 3	H 3	H 3	H 3				
AVERAGE OF COS FOR POS	3	3	3	3				
AVERAGE OF POS	3	3	3	3				
AVERAGE	3							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: SOCIAL MEDIA ANALYTICS

COURSE CODE: MDS21304B

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Identify various platforms in social media.	III (APPLY)
CO2	CO2: Understand processing of social media.	II (UNDERSTAND)
CO3	CO3: Compare differences between twitter and other social media networks.	II (UNDERSTAND)
CO4	CO4: Analyze Facebook information and write business cases.	IV(ANALYZE)
CO5	CO5: Differentiate social media networks Instagram (i.e.,usage of instagram and data processing techniques also they will get idea)	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	H	H	S					S	S	S	H	
2	H	H	H	H					S	S	S	H	
3	H	H	H	H					H	H	H	H	
4	H	H	H	H					H	H	H	H	
5	H	H	H	H					H	H	H	H	

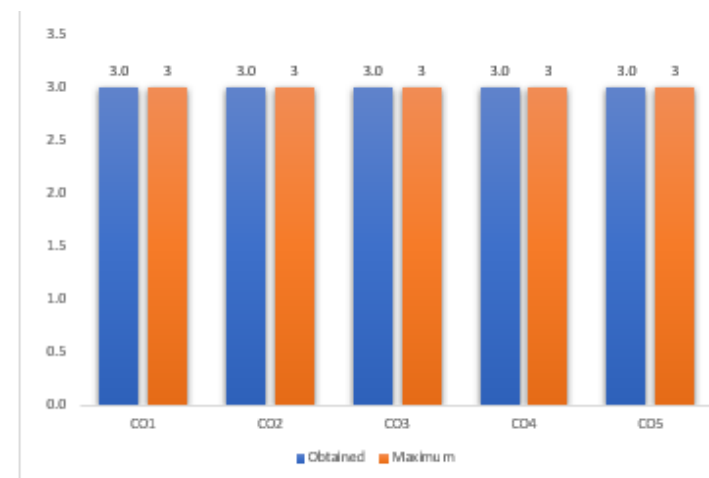
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDENCE		External Exam				
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	95.0	3.0	3.0	100.0	3.0	3.0	3.0
CO2	100.0	3.0			100.0	3.0			100.0	3.0	95.0	3.0	3.0	100.0	3.0	3.0	3.0
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	95.0	3.0	3.0	100.0	3.0	3.0	3.0
CO4			100.0	3.0	100.0	3.0			100.0	3.0	95.0	3.0	3.0	100.0	3.0	3.0	3.0
CO5			100.0	3.0	100.0	3.0			100.0	3.0	95.0	3.0	3.0	100.0	3.0	3.0	3.0

AVERAGE	AVERAGE
3	3

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	P01	P02	P03	P04	P05	P06	P07	P08
CO1	H 3	H 3	H 3					
CO2	H 3	H 3	H 3	H 3				
CO3	H 3	H 3	H 3	H 3				
CO4	H 3	H 3	H 3	H 3				
CO5	H 3	H 3	H 3	H 3				
AVERAGE OF COS FOR POS	3	3	3	3				
AVERAGE OF PDS	3	3	3	3				
AVERAGE	3							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: NATURAL LANGUAGE PROCESSING

COURSE CODE: MDS21307

CREDITS: 4

DEPARTMENT: M.Sc. DATA SCIENCE

PROGRAMME OUTCOMES Or POS(MDS):

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

PO4: Enhance disciplinary competency, employability, and technical skills.

PROGRAMME SPECIFIC OUTCOME:

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	Understand various approaches on syntax and semantics in NLP	II (UNDERSTAND)
CO2	Apply various methods to discourse, generation, dialogue and summarization using NLP.	I (APPLY)
CO3	Analyse various methodologies used in Machine Translation, machine learning techniques used in NLP including unsupervised models and to analyse real time applications.	III (ANALYSE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	
1			H	H					S	H	H		
2		H		H						H	H		
3		H		S					H	H	S	S	

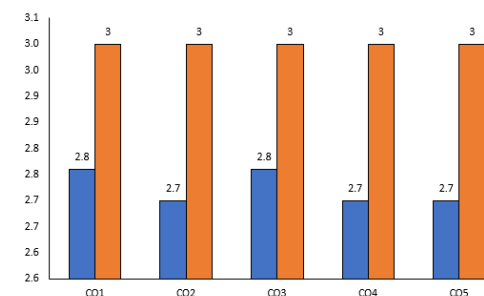
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDENCE		co wise internal average	External Exam			co wise total average
	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment		pass%	Attainment	co wise external average	
CO1	97.0	3.0			97.0	3.0	100.0	3.0	100.0	3.0	54.5	0.0	2.4	97.0	3.0	3.0	2.8
CO2	97.0	3.0			97.0	3.0			100.0	3.0	54.5	0.0	2.3	97.0	3.0	3.0	2.7
CO3	97.0	3.0	97.0	3.0	97.0	3.0			100.0	3.0	54.5	0.0	2.4	97.0	3.0	3.0	2.8
CO4			97.0	3.0	97.0	3.0			100.0	3.0	54.5	0.0	2.3	97.0	3.0	3.0	2.7
CO5			97.0	3.0	97.0	3.0			100.0	3.0	54.5	0.0	2.3	97.0	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The total CO attainment of the course is satisfactory. Performance in the External exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1			H 2.76	H 2.76				
CO2		H 2.7		H 2.7				
CO3		H 2.76						
CO4								
CO5								
AVERAGE OF COS FOR POS		2.73	2.76	2.73				
AVERAGE OF POS		2.73	2.76	2.715				
AVERAGE	2.735							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: REGRESSION ANALYSIS AND INFERENTIAL STATISTICS
COURSE CODE: MDS20205
CREDITS: 4
DEPARTMENT: M.Sc. DATA SCIENCE
PROGRAMME OUTCOMES Or POS(MDS): PROGRAM OBJECTIVES (POs) PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement. PO2: Identify the need and scope of the Inter disciplinary area. PO3: Understand the professional, ethical, and social responsibilities. PO4: Enhance disciplinary competency, employability, and technical skills.
PROGRAMME SPECIFIC OUTCOME: PROGRAM SPECIFIC OUTCOMES (PSOs) PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science. PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines. PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems. PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns. PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
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CO1	CO1: To explain the concepts of estimation and testing of hypothesis which used for drawing the statistical inference.	II (UNDERSTAND)
CO2	CO2: To apply the idea of sampling distributions of different statistics in testing of hypothesis.	III (APPLY)
CO3	CO3: To develop a deeper understanding of simple linear regression and test for the quality of its fit.	III (APPLY)
CO4	CO4: Interpret multiple linear regression model parameters and to understand the model selection.	II (UNDERSTAND)
CO5	CO5: To estimate the effect of outliers and to understand the concepts of non – linear regression.	V (EVALUATE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	PSO5
1	H	H	S	H					H	H	S	H	S
2	H	H		H					H	H		H	

3		H		H					H	H		H	
4		H		H					H	H		H	
5	H		H	H					H	H		H	

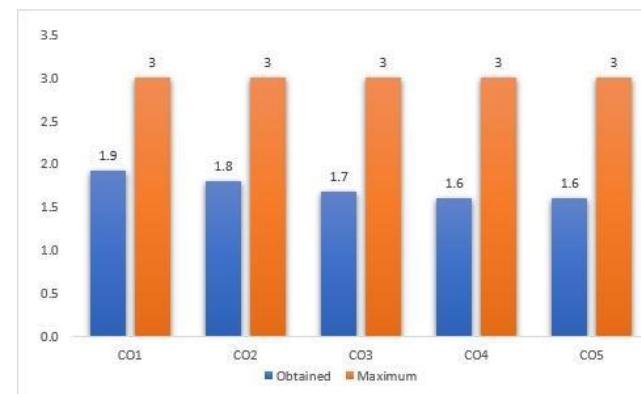
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		External Exam				
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	83.3	2.0			72.2	1.0	100.0	3.0	100.0	3.0	61.1	0.0	1.8	83.3	2.0	2.0	1.9
CO2	83.3	2.0			72.2	1.0			100.0	3.0	61.1	0.0	1.5	83.3	2.0	2.0	1.8
CO3	83.3	2.0	63.9	0.0	72.2	1.0			100.0	3.0	61.1	0.0	1.2	83.3	2.0	2.0	1.7
CO4			63.9	0.0	72.2	1.0			100.0	3.0	61.1	0.0	1.0	83.3	2.0	2.0	1.6
CO5			63.9	0.0	72.2	1.0			100.0	3.0	61.1	0.0	1.0	83.3	2.0	2.0	1.6

AVERAGE	AVERAGE
2	1.72

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The attainment is 2 for the internals and can be improved. It is observed that more concentration is needed on the topics of multiple and non – linear regression analysis.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

1. Copy the completed table 1.
2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]
3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]



OUTCOME	PO1	PO2	PO3	PO4
CO1	H 1.92	H 1.92		H 1.92
CO2	H 1.8	H 1.8		H 1.8
CO3		H 1.68		H 1.68
CO4		H 1.6		H 1.6
CO5	H 1.6		H 1.6	H 1.6
AVERAGE OF COS FOR POS	1.773333333	1.75	1.6	1.72
AVERAGE OF POS	1.72444	1.7075	1.6	1.68
AVERAGE	1.677986111			

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: STATISTICS AND PROBABILITY
COURSE CODE: MDS20105
CREDITS: 4
DEPARTMENT: M.Sc. DATA SCIENCE
PROGRAMME OUTCOMES Or POS(MDS): PROGRAM OBJECTIVES (POs) PO1: Engage in continuous reflective learning in the context of technology and scientific advancement. PO2: Identify the need and scope of the Inter disciplinary area. PO3: Understand the professional, ethical, and social responsibilities. PO4: Enhance disciplinary competency, employability, and technical skills.
PROGRAMME SPECIFIC OUTCOME: PROGRAM SPECIFIC OUTCOMES (PSOs) PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science. PSO2: Problem Analysis and Design Ability: To identify analyse and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines. PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems. PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns. PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
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CO1	CO1: To examine different concepts of probability and apply them in real life applications.	IV (ANALYZE)
CO2	CO2: To make use of different concepts of random variables in understanding scope of different distributions.	II (UNDERSTAND)
CO3	CO3: To utilize different concepts of expectations in understanding the characteristics of distributions.	III (APPLY)
CO4	CO4: To understand the relationships between different discrete distributions.	II (UNDERSTAND)
CO5	CO5: To explain the different characteristics of continuous distributions and understand which one to use for different cases.	II (UNDERSTAND)

Table 1: CO, PO, PSO MAPPING

Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	PSO5
1	H		S	H					H	H		H	
2	H	H		H					H	H		H	

3		H		H					H	H		H	
4	H	H		H					H	H		H	
5		H		H					H	H		H	

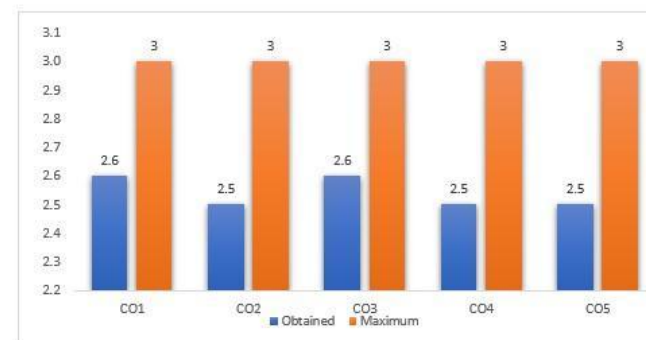
H: Highly Supportive

S: Supportive

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

- Pass percent of 85% and above= 3
- Pass percent between 75% - 85%= 2
- Pass percent between 65%- 75%= 1
- Pass percent of less than 65%= 0



co	WEEKLY TEST		MID SEM		PREFINAL		ASSIGNMENT		VIVA-VOCE		ATTENDANCE		co wise internal average	External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level		co wise external average	co wise total average		
CO1	97.2	3.0			72.2	1.0	100.0	3.0	100.0	3.0	63.9	0.0	2.0	86.1	3.0	3.0	2.6
CO2	97.2	3.0			72.2	1.0			100.0	3.0	63.9	0.0	1.8	86.1	3.0	3.0	2.5
CO3	97.2	3.0	97.2	3.0	72.2	1.0			100.0	3.0	63.9	0.0	2.0	86.1	3.0	3.0	2.6
CO4			97.2	3.0	72.2	1.0			100.0	3.0	63.9	0.0	1.8	86.1	3.0	3.0	2.5
CO5			97.2	3.0	72.2	1.0			100.0	3.0	63.9	0.0	1.8	86.1	3.0	3.0	2.5

AVERAGE	AVERAGE
3	2.54

RESULT ANALYSIS: (Only write a comment on the total CO attainment for the course and areas of improvement, how less it is from 3, which exam are they losing marks in, how can we attain 3)

The attainment is 3 for the internals and is satisfactory. It is observed that more concentration is needed on the topics of random variables, and distributions.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

- 1. Copy the completed table 1.**
- 2. Retain only the POs and the Highly supportive (H) points. [Delete the PSO columns and the ‘S’ points]**
- 3. Write the respective CO-wise total average (column K in table 2) wherever each CO is mapped as (H) under each PO.]**



OUTCOME	PO1	PO2	PO3	PO4
CO1	H 2.6			H 2.6
CO2	H 2.5	H 2.5		H 2.5
CO3		H 2.6		H 2.6
CO4	H 2.5	H 2.5		H 2.5
CO5		H 2.5		H 2.5
AVERAGE OF COS FOR POS	2.533333333	2.525		2.54
AVERAGE OF POS	2.51111	2.525		2.528
AVERAGE	2.52137037			