COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: GENERAL ENGLISH I

COURSE CODE: EN18101

CREDITS: 3

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)
B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):
Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** To Distinguish between words which are either spelt or pronounced alike, yet render distinct meanings; imparting a sound clarity on everyday usage of language, and for developing the art of parallel listening and writing.	II Understanding
CO2	**CO2:** To Construct vocabulary and to gain understanding on the tense component, a pivotal constituent for language structuring and vocabulary building.	III Applying
CO3	**CO3:** To Identify with economical word constructions, paying specific attention in constructing sound writing skills.	I Remembering
CO4	**CO4:** To Interpret functional grammar, the basic part involved in sentence constructing to improve linguistic skills.	V Evaluating
CO5	**CO5:** To Develop communication skills to provide a platform for language efficiency for effective language delivery.	II Understanding

Table 1: CO, PO, PSO MAPPING

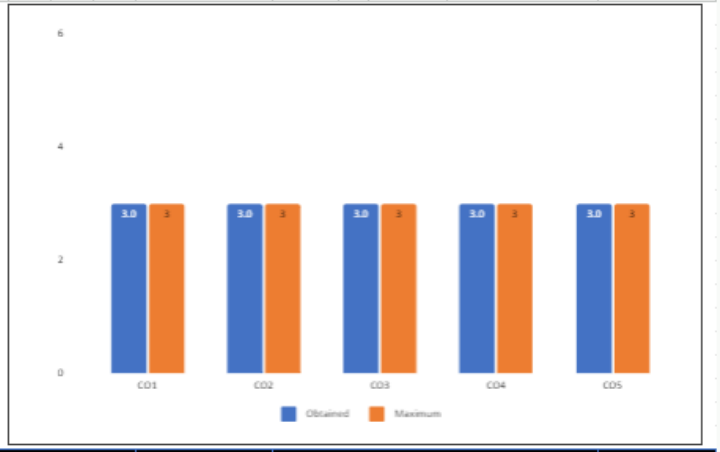
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	H		S	H	H		S	H	H	H	S	H
C02	H	H		H		H	H	S		S		
C03		H	H	H	H	H		S	S		H	
C04	H	H	H		H		H	S		H		S
C05	H		H	S	H		H	H		H		H

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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	93.9	3.0	93.9	3.0	85.7	3.0	3.0	100.0	3.0	3.0	3.0
CO2	100.0	3.0			100.0	3.0			93.9	3.0	85.7	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			93.9	3.0	85.7	3.0	3.0	100.0	3.0	3.0	3.0
CO4			100.0	3.0	100.0	3.0			93.9	3.0	85.7	3.0	3.0	100.0	3.0	3.0	3.0
CO5			100.0	3.0	100.0	3.0			93.9	3.0	85.7	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			H 3
CO2	H 3	H 3		H 3		H 3	H 3	
CO3		H 3	H 3	H 3	H 3	H 3		
CO4	H 3	H 3	H 3		H 3		H 3	
CO5	H 3		H 3		H 3		H 3	H 3
AVERAGE OF COS FOR POS	3	3	3	3	3	3	3	3
AVERAGE OF POS	3	3	3	3	3	3	3	3
AVERAGE	3							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: VALUE EDUCATION & PERSONALITY DEVELOPMENT

COURSE CODE: VE18101

CREDITS: 2

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Students will be able to differentiate Accepted norms and counter values and be able to **identify** the various Dimensions of Human Development	IV Analysing
CO2	**CO2:** Students will be able to **demonstrate** Love and Experience of God and identify the Basic Issues of Life and Happiness as a life goal	III Applying
CO3	**CO3:** They will able to **understand** the importance of concern for others and critique the various problems that deter the growth of the society	II Understanding

CO4	**CO4:** The students will be able to recognize the traits of a good personality and practice Self exploration	I Remembering
CO5	**CO5:** Students will be able to interpret the purpose of life and goal setting and demonstrate self-management	II Understanding

Table 1: CO, PO, PSO MAPPING

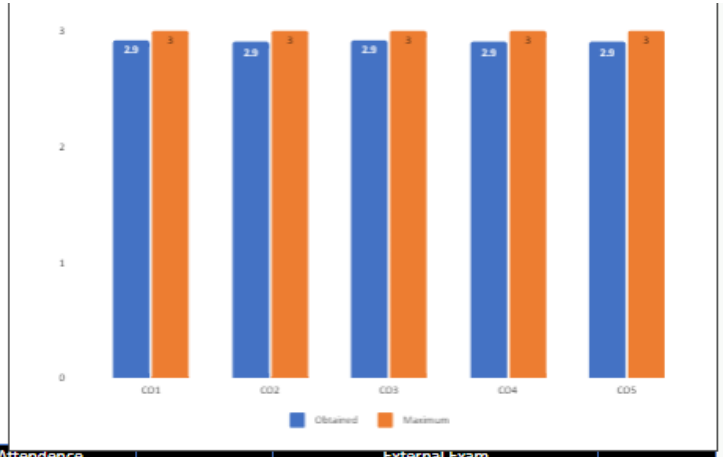
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		**H**	**S**	**H**		**H**	**H**		**S**		
C02	**S**			**H**		**H**		**S**		**H**		**H**
C03	**H**	**S**	**H**	**H**	**H**	**H**	**H**		**H**	**S**		**H**
C04	**S**		**S**		**S**	**S**	**H**	**S**		**H**	**S**	**H**
C05	**H**		**H**			**H**	**S**	**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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	93.9	3.0			95.9	3.0	100.0	3.0	95.9	3.0	79.6	2.0	2.8	100.0	3.0	3.0	2.9
CO2	93.9	3.0			95.9	3.0			95.9	3.0	79.6	2.0	2.8	100.0	3.0	3.0	2.9
CO3	93.9	3.0	87.8	3.0	95.9	3.0			95.9	3.0	79.6	2.0	2.8	100.0	3.0	3.0	2.9
CO4			87.8	3.0	95.9	3.0			95.9	3.0	79.6	2.0	2.8	100.0	3.0	3.0	2.9
CO5			87.8	3.0	95.9	3.0			95.9	3.0	79.6	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		H 2.92	H 2.92
CO2				H 2.9		H 2.9		
CO3	H 2.92		H 2.92	H 2.92	H 2.92	H 2.92	H 2.92	
CO4							H 2.9	
CO5	H 2.9		H 2.9			H 2.9		H 2.9
AVERAGE OF COS FOR POS	2.913333333		2.913333333	2.91	2.92	2.906666667	2.913333333	2.91
AVERAGE OF POS	.91111111		.91111111	2.91	2.92	.90666666	.91111111	2.905
AVERAGE	2.910714286							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: FUNDAMENTALS OF INFORMATION TECHNOLOGY

COURSE CODE: BS22101

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Understand basic computer terminology and number systems.	II Understanding
CO2	**CO2:** Learn about operating systems, and its types.	VI Creating
CO3	**CO3:** Learn about the applications of Information technology	VI Creating
CO4	**CO4:** Importance of system development and the phases of SDLC	I Remembering

CO5	**CO5:** Use of modern means of communications, types of networks and topologies	II Understanding

Table 1: CO, PO, PSO MAPPING

outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		H	S		S				H		S
C02	**S**	**S**	**S**	**H**	**H**		**S**	**H**		**H**		**H**
C03	**H**	**H**	**S**	**H**	**S**	**H**	**H**	**S**	**H**	**H**		**S**
C04	**H**		**H**	**H**	**H**	**S**		**H**		**H**		**H**
C05	**H**		**S**	**H**	**S**			**H**	**S**	**S**		**H**

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

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Pass percent between 75% - 85%= 2
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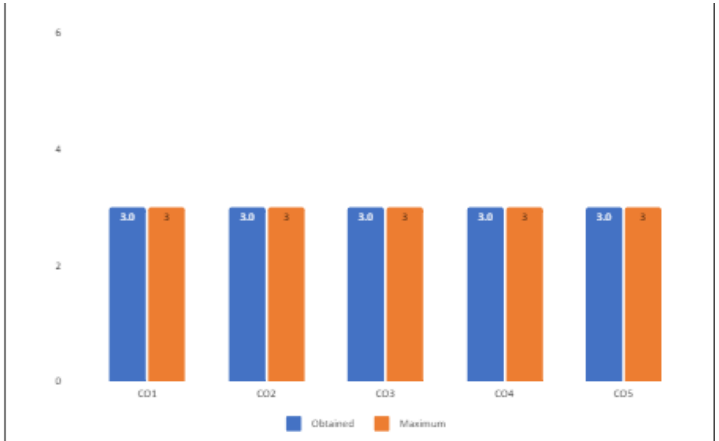

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	95.9	3.0			100.0	3.0	100.0	3.0	100.0	3.0	98.0	3.0	3.0	100.0	3.0	3.0	3.0
CO2	95.9	3.0			100.0	3.0			100.0	3.0	98.0	3.0	3.0	100.0	3.0	3.0	3.0
CO3	95.9	3.0	100.0	3.0	100.0	3.0			100.0	3.0	98.0	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	98.0	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	98.0	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)

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

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DIFFERENTIAL EQUATIONS AND NUMERICAL ANALYSIS

COURSE CODE: DS19102

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
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	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Classify the differential equations with respect to their order and linearity. Solve differential equations of first order using numerical and analytical methods such as Integrating Factors.	IV Analyzing
CO2	**CO2:** Analyze and Solve basic application problems described by first order differential equations. such as orthogonal trajectories	IV Analyzing
CO3	**CO3:** Solve second order Homogeneous Equations with Constant Coefficients. Obtain exact and Numerical solutions using differential equations technology.	V Evaluating
CO4	**CO4:** Analyse and evaluate the accuracy of common numerical methods.	IV Analyzing

CO5	**CO5:** Select appropriate numerical methods to apply to various types of problems in engineering and science in consideration of the mathematical operations.	V Evaluating

Table 1: CO, PO, PSO MAPPING

outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		S	S	H	H	S			S	S	H
C02	**H**		H	H			H	S		S		S
C03	**S**			H	H	S	H	H	H	H		H
C04	**H**		H	S	H	H	H	S	S	H	H	S
C05	**H**		H	H	S		S	H		H		H

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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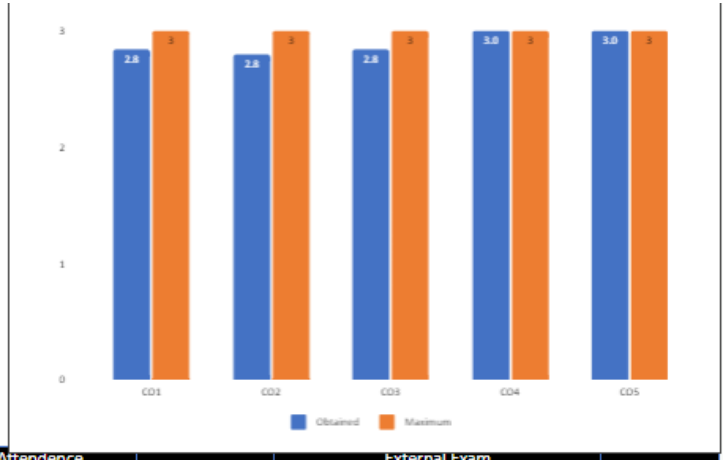

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	71.4	1.0			100.0	3.0	100.0	3.0	100.0	3.0	93.9	3.0	2.6	95.9	3.0	3.0	2.8
CO2	71.4	1.0			100.0	3.0			100.0	3.0	93.9	3.0	2.5	95.9	3.0	3.0	2.8
CO3	71.4	1.0	100.0	3.0	100.0	3.0			100.0	3.0	93.9	3.0	2.6	95.9	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	93.9	3.0	3.0	95.9	3.0	3.0	3.0
CO5			100.0	3.0	100.0	3.0			100.0	3.0	93.9	3.0	3.0	95.9	3.0	3.0	3.0

AVERAGE	AVERAGE
3	2.896

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)

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Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

1. Copy the completed table 1.

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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			H 2.8	
CO3				H 2.84	H 2.84		H 2.84	H 2.84
CO4	H 3		H 3		H 3	H 3	H 3	
CO5	H 3		H 3	H 3				H 3
AVERAGE OF COS FOR POS	2.91		2.933333333	2.88	2.893333333	2.92	2.88	2.92
AVERAGE OF POS	2.9275		.93333333	2.88	.91111111	2.96	2.88	2.92
AVERAGE	2.915992063							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DESCRIPTIVE STATISTICS & PROBABILITY

COURSE CODE: BS19025

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1: Organize**, manage and present data and Analyze statistical data using measures of central tendency	VI Creating
CO2	**CO2: Analyze** the statistical data using dispersion and location.	IV Analyzing
CO3	**CO3: Use** the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.	II Understanding
CO4	**CO4: Develop** the probability density function of transformation of random variables.	III Applying

CO5	**CO5: : Identify** probabilities, and derive the marginal and conditional distributions of bivariate random variables.	IV Analyzing

Table 1: CO, PO, PSO MAPPING

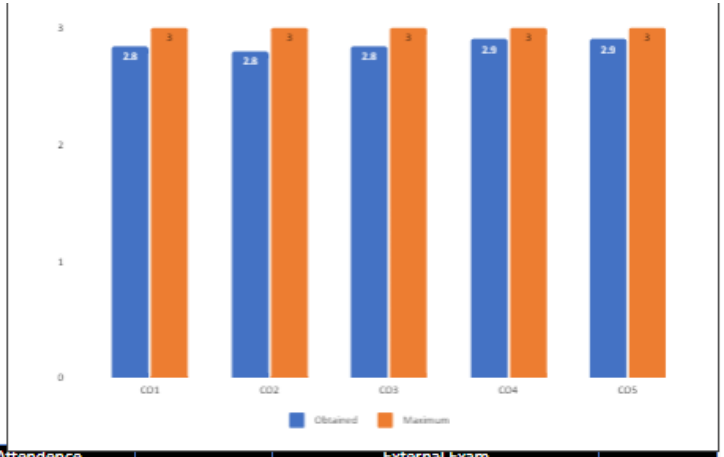
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		S	H	H	S	H	H	H	H		H
C02	**H**	**S**	**H**	**H**		**H**	**H**	**H**		**H**		**H**
C03	**H**	**H**	**S**	**H**	**S**	**H**	**S**	**S**		**S**		**S**
C04	**H**		**H**	**H**	**H**		**H**	**H**		**H**		**S**
C05	**H**	**H**	**H**	**H**	**H**		**H**	**S**		**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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	83.7	2.0			100.0	3.0	100.0	3.0	100.0	3.0	81.6	2.0	2.6	93.9	3.0	3.0	2.8
CO2	83.7	2.0			100.0	3.0			100.0	3.0	81.6	2.0	2.5	93.9	3.0	3.0	2.8
CO3	83.7	2.0	100.0	3.0	100.0	3.0			100.0	3.0	81.6	2.0	2.6	93.9	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	81.6	2.0	2.8	93.9	3.0	3.0	2.9
CO5			100.0	3.0	100.0	3.0			100.0	3.0	81.6	2.0	2.8	93.9	3.0	3.0	2.9

AVERAGE	AVERAGE
3	2.856

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		H 2.84	H 2.84
CO2	H 2.8		H 2.8	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 2.9		H 2.9	H 2.9	H 2.9		H 2.9	H 2.9
CO5	H 2.9	H 2.9	H 2.9	H 2.9	H 2.9		H 2.9	
AVERAGE OF COS FOR POS	2.856	2.87	2.866666667	2.856	2.88	2.82	2.86	2.846666667
AVERAGE OF POS	2.8592	2.87	.86666666	2.8592	.89333333	2.82	2.865	.84888888
AVERAGE	2.860286111							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PROBLEM SOLVING AND PROGRAMMING THROUGH C

COURSE CODE: DS22103

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Understand the basic introduction of computer and programming language	II Understanding
CO2	**CO2:** Identify 'C' data types, operators and data input /output functions	IV Analyzing
CO3	**CO3:** Categorize 'C' control structures, arrays and string concept.	VI Creating
CO4	**CO4:** Explain 'C' function, recursion, pointers and dynamic memory allocation	II Understanding

CO5	**CO5:** Express the concept of structures, union and file handling in 'C'.	I Remembering

Table 1: CO, PO, PSO MAPPING

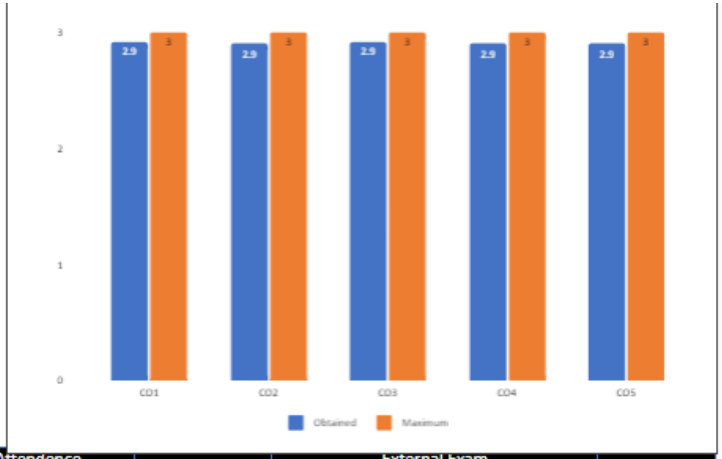
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		S	H	H	H	S	H		H		S
C02	**H**	**H**	**H**	**S**		**H**	**H**	**S**				**H**
C03	**H**	**H**	**S**	**H**	**S**		**H**	**H**		**S**		**H**
C04	**H**	**S**	**H**	**H**	**H**	**H**	**S**	**H**		**H**		**H**
C05	**H**		**H**	**S**	**H**	**S**	**H**	**S**		**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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	91.8	3.0			100.0	3.0	100.0	3.0	100.0	3.0	79.6	2.0	2.8	93.9	3.0	3.0	2.9
CO2	91.8	3.0			100.0	3.0			100.0	3.0	79.6	2.0	2.8	93.9	3.0	3.0	2.9
CO3	91.8	3.0	91.8	3.0	100.0	3.0			100.0	3.0	79.6	2.0	2.8	93.9	3.0	3.0	2.9
CO4			91.8	3.0	100.0	3.0			100.0	3.0	79.6	2.0	2.8	93.9	3.0	3.0	2.9
CO5			91.8	3.0	100.0	3.0			100.0	3.0	79.6	2.0	2.8	93.9	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	H 2.92		H 2.92
CO2	H 2.9	H 2.9	H 2.9			H 2.9	H 2.9	
CO3	H 2.92	H 2.92		H 2.92			H 2.92	H 2.92
CO4	H 2.9		H 2.9	H 2.9	H 2.9	H 2.9		H 2.9
CO5	H 2.9		H 2.9		H 2.9		H 2.9	
AVERAGE OF COS FOR POS	2.908	2.91	2.9	2.913333333	2.906666667	2.906666667	2.906666667	2.913333333
AVERAGE OF POS	2.9056	2.91	2.9	.91111111	.90222222	.90222222	.90666666	.91111111
AVERAGE	2.906116667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ENVIRONMENTAL STUDIES AND GENDER SENSITIZATION

COURSE CODE: ES18101

CREDITS: 3

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1: Understand** the importance of environmental education, conservation of natural resources & understand the importance of ecosystems and biodiversity	II Understanding
CO2	**CO2: Understand** the pollution problems and apply the environmental science knowledge on solid waste management, disaster management	II Understanding
CO3	**CO3: Apply** the environmental science knowledge to improve the resources Evaluate and understand the sustainable environmental conditions and control methods	III Applying

CO4	**CO4: Identify** the interactions and intersections of identities (e.g., gender, race, ethnicity, class, sexuality, and so on) and assess the ways in which they contribute to instances of privilege and power dynamics across cultures, space, and time. And their problems	IV Analyzing
CO5	**CO5: Understand** the gender problems and ways of addressing them, including interactions across local to global scales in communities and overcome inequalities with legislations	II Understanding

Table 1: CO, PO, PSO MAPPING

outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**	**S**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**S**	**S**	**H**
C02				H		S	H	S	H	H	H	H
C03	**S**	**H**	**H**	**S**	**H**	**H**	**S**	**H**				**H**
C04	H	S	S		S			H	S	H	S	S
C05	**S**	**H**	**H**	**S**	**S**	**H**	**S**	**H**		**S**		**H**

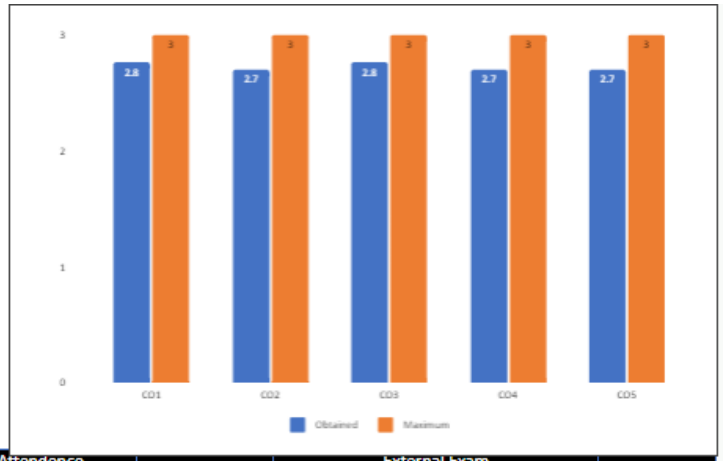
H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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

Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	50.0	0.0	2.4	100.0	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	50.0	0.0	2.3	100.0	3.0	3.0	2.7
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.4	100.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.3	100.0	3.0	3.0	2.7
CO5			100.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.3	100.0	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 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			H 2.76		H 2.76
CO2				H 2.7			H 2.7	
CO3		H 2.76	H 2.76		H 2.76	H 2.76		H 2.76
CO4	H 2.7							H 2.7
CO5		H 2.7	H 2.7			H 2.7		H 2.7
AVERAGE OF COS FOR POS	2.73	2.73	2.74	2.7	2.76	2.74	2.7	2.73
AVERAGE OF POS	2.715	2.73	.73333333	2.7	2.76	.73333333	2.7	2.7225
AVERAGE	2.724270833							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PYTHON PROGRAMMING

COURSE CODE: DS20301

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
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- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions**.**
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1	**CO1:** Implement the structure and components of a Python program.	III Applying
CO2	**CO2:** Choose appropriate data structures.	II Understanding
CO3	**CO3:** Interpret how to write classes and create objects.	V Evaluating
CO4	**CO4:** Explain how to use Inheritance and Threads.	II Understanding

CO5	**CO5:** Create basic GUI programs and Database Connectivity.	VI Creating

Table 1: CO, PO, PSO MAPPING

outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**	**H**	**H**	**S**	**H**	**S**		**S**		**S**		**H**
C02	**H**	**S**	**H**	**H**			**H**				**H**	
C03	**H**		H	S	H	H	H	H		H	H	
C04	**H**	**H**	**S**	**S**	**S**	**H**		**S**		**H**	**S**	**S**
C05	**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
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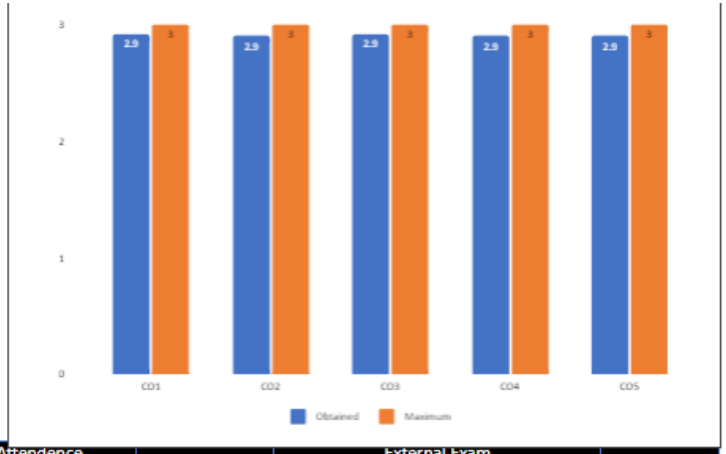


co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	76.0	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	76.0	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	76.0	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	76.0	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	76.0	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		H 2.92			
CO2	H 2.9		H 2.9	H 2.9			H 2.9	
CO3	H 2.92		H 2.92		H 2.92	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				H 2.9
AVERAGE OF COS FOR POS	2.908	2.91	2.91	2.9	2.92	2.91	2.91	2.91
AVERAGE OF POS	2.9056	2.905	2.9075	2.9	2.92	2.91	2.91	2.91
AVERAGE	2.9085125							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: COMPUTER ORGANIZATION

COURSE CODE: DS18302

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Understand basic Circuit designing and number systems	II Understanding
CO2	**CO2:** Explain about how data transferred from one register to another register	VI Creating
CO3	**CO3:** Construct designing of control unit and Central Processing Unit	III Applying
CO4	**CO4:** Classify different types of computer arithmetic operations	IV Analyzing

CO5	**CO5:** Categorize all peripheral devices and memory	IV Analyzing

Table 1: CO, PO, PSO MAPPING

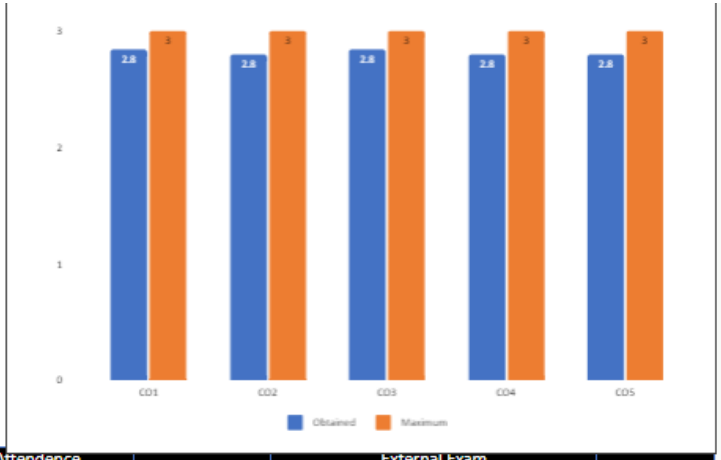
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		H	S			S	S		S		H
C02	**H**	**H**		**H**		**H**	**H**	**H**		**H**		**H**
C03	**S**	**H**	**H**		**H**		**H**	**S**		**H**		**S**
C04	**H**	**S**	**S**	**H**	**H**	**S**	**H**	**S**		**S**		**S**
C05	**H**		**H**	**H**	**S**		**S**	**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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	90.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	68.0	1.0	2.6	96.0	3.0	3.0	2.8
CO2	90.0	3.0			100.0	3.0			100.0	3.0	68.0	1.0	2.5	96.0	3.0	3.0	2.8
CO3	90.0	3.0	96.0	3.0	100.0	3.0			100.0	3.0	68.0	1.0	2.6	96.0	3.0	3.0	2.8
CO4			96.0	3.0	100.0	3.0			100.0	3.0	68.0	1.0	2.5	96.0	3.0	3.0	2.8
CO5			96.0	3.0	100.0	3.0			100.0	3.0	68.0	1.0	2.5	96.0	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 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					
CO2	H 2.8	H 2.8		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	H 2.8		H 2.8	
CO5	H 2.8		H 2.8	H 2.8				H 2.8
AVERAGE OF COS FOR POS	2.81	2.82	2.826666667	2.8	2.82	2.8	2.813333333	2.8
AVERAGE OF POS	2.8025	2.82	.82222222	2.8	2.82	2.8	.81333333	2.8
AVERAGE	2.809756944							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: STATISTICAL METHODS

COURSE CODE:BS20038

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.

- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Interpret the correlation between two variables.	II Understanding
CO2	**CO2:** Distinguish the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient	IV Analyzing
CO3	**CO3:** Show the association between the attributes.	III Applying

CO4	**CO4:** Generalize the properties of estimators.	II Understanding
CO5	**CO5:** Differentiate Maximum likely hood estimation and method of moments	IV Analyzing

Table 1: CO, PO, PSO MAPPING

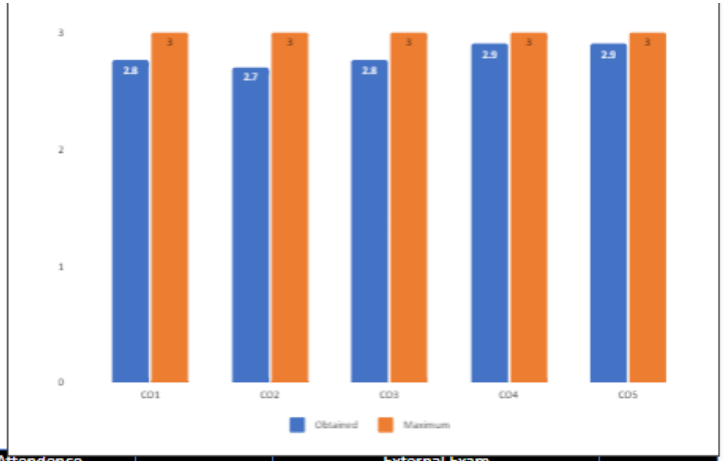
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		H	S	H		S	S		S		H
C02	**H**		S	H			S	H		H	S	H
C03	**H**		H	S	H		H	S	H	S	H	H
C04	**S**		H	H	S		H	H	S	H		S
C05	**H**		S	H	S		S	H	H	H		H

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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	70.0	1.0			100.0	3.0	100.0	3.0	100.0	3.0	84.0	2.0	2.4	88.0	3.0	3.0	2.8
CO2	70.0	1.0			100.0	3.0			100.0	3.0	84.0	2.0	2.3	88.0	3.0	3.0	2.7
CO3	70.0	1.0	90.0	3.0	100.0	3.0			100.0	3.0	84.0	2.0	2.4	88.0	3.0	3.0	2.8
CO4			90.0	3.0	100.0	3.0			100.0	3.0	84.0	2.0	2.8	88.0	3.0	3.0	2.9
CO5			90.0	3.0	100.0	3.0			100.0	3.0	84.0	2.0	2.8	88.0	3.0	3.0	2.9

AVERAGE	AVERAGE
3	2.804

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		H 2.76			
CO2	H 2.7			H 2.7				H 2.7
CO3	H 2.76		H 2.76		H 2.76		H 2.76	
CO4			H 2.9	H 2.9			H 2.9	H 2.9
CO5	H 2.9			H 2.9				H 2.9
AVERAGE OF COS FOR POS	2.78		2.806666667	2.833333333	2.76		2.83	2.833333333
AVERAGE OF POS	2.785		.82222222	.83333333	2.76		2.83	.83333333
AVERAGE	2.810648148							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DATABASE MANAGEMENT SYSTEMS

COURSE CODE: DS18303

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** To describe Entity Relationship and Enhanced ER model.	V Evaluating
CO2	**CO2:** To understand the relational model, reduction to relation schema, relational algebra and normalization.	II Understanding
CO3	**CO3:** To use SQL- the standard language of relational databases and PL/SQL programming.	III Applying

CO4	**CO4:** To understand the storage and file structure, storage access, indexing and hashing techniques of the database.	II Understanding
CO5	**CO5:** To understand the concept of Transactions, recovery system and concurrency control.	II Understanding

Table 1: CO, PO, PSO MAPPING

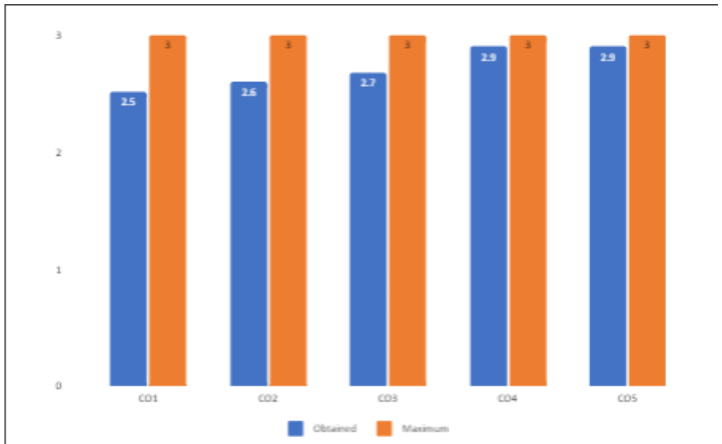
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**	**H**	**H**	**S**	**H**		**S**	**H**		**S**		**H**
C02	**H**		S	H		H	H	S	H	H		H
C03	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**		**H**
C04	**H**	H	H	H	S	S	H	S	S	H		S
C05	**H**		**H**	**H**	**S**	**H**	**S**	**H**	**H**	**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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	40.0	0.0			92.0	3.0	66.0	1.0	100.0	3.0	84.0	2.0	1.8	100.0	3.0	3.0	2.5
CO2	40.0	0.0			92.0	3.0			100.0	3.0	84.0	2.0	2.0	100.0	3.0	3.0	2.6
CO3	40.0	0.0	90.0	3.0	92.0	3.0			100.0	3.0	84.0	2.0	2.2	100.0	3.0	3.0	2.7
CO4			90.0	3.0	92.0	3.0			100.0	3.0	84.0	2.0	2.8	100.0	3.0	3.0	2.9
CO5			90.0	3.0	92.0	3.0			100.0	3.0	84.0	2.0	2.8	100.0	3.0	3.0	2.9

AVERAGE	AVERAGE
3	2.72

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 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 2.52	H 2.52	H 2.52		H 2.52			H 2.52
CO2	H 2.6			H 2.6		H 2.6	H 2.6	
CO3	H 2.68	H 2.68	H 2.68	H 2.68	H 2.68	H 2.68	H 2.68	
CO4	H 2.9	H 2.9	H 2.9	H 2.9			H 2.9	
CO5	H 2.9		H 2.9	H 2.9		H 2.9		H 2.9
AVERAGE OF COS FOR POS	2.72	2.7	2.75	2.77	2.6	2.726666667	2.726666667	2.71
AVERAGE OF POS	2.76	2.76	2.8075	2.77	2.64	.72666666	.72666666	2.805
AVERAGE	2.749479167							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: OPERATION RESEARCH

COURSE CODE: BS21048

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies**.**
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Identify the various techniques of operations research and to translate a real–world problems, given in words, into a mathematical formulation.	IV Analyzing
CO2	**CO2:** Construct the simplex table and to plan the optimum results.	III Applying
CO3	**CO3:** Use the program for optimizing the cost involved in transportation problems.	III Applying
CO4	**CO4:** Develop and solve transformation models and assignment models.	III Applying

CO5	**CO5:** Design the sequence of jobs and to make up the total process time.	IV Analyzing

Table 1: CO, PO, PSO MAPPING

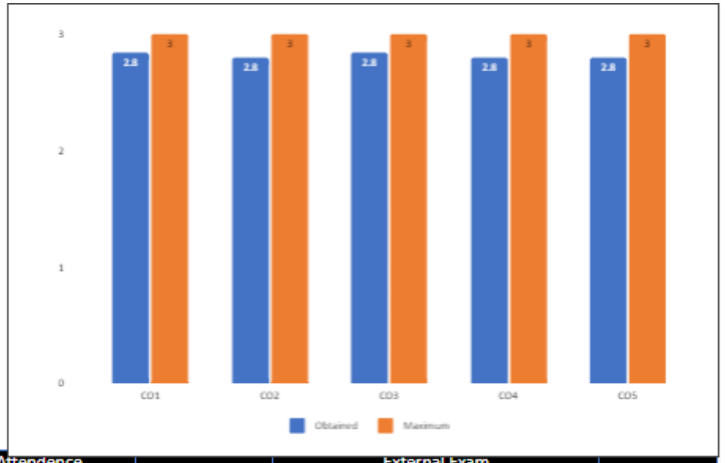
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		H	S	H		S	S		S		H
C02	**H**		S	H	H	H	H	H		H		H
C03	**H**		H	H	H	H	H	S		H		H
C04	**H**		H	H	S	S	H	H		H		S

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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	96.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	66.0	1.0	2.6	100.0	3.0	3.0	2.8
CO2	96.0	3.0			100.0	3.0			100.0	3.0	66.0	1.0	2.5	100.0	3.0	3.0	2.8
CO3	96.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	66.0	1.0	2.6	100.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	66.0	1.0	2.5	100.0	3.0	3.0	2.8
CO5			100.0	3.0	100.0	3.0			100.0	3.0	66.0	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 mid semester exam needs to improve to improve overall course outcome attainment level.

Table 3: PROGRAMME OUTCOME MAPPING

Instruction:

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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	H 2.8	H 2.8	H 2.8
CO3	H 2.84		H 2.84	H 2.84	H 2.84	H 2.84	H 2.84	
CO4	H 2.8		H 2.8	H 2.8			H 2.8	H 2.8
CO5	H 2.8		H 2.8	H 2.8				H 2.8
AVERAGE OF COS FOR POS	2.816		2.82	2.81	2.826666667	2.82	2.813333333	2.8
AVERAGE OF POS	2.8112		2.815	2.81	.82222222	2.82	.81333333	2.8
AVERAGE	2.813107937							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DATA VISUALIZATION TOOLS

COURSE CODE:DS21501

CREDITS: 3

DEPARTMENT: B. Sc. MATHEMATICS, STATISTICS & COMPUTER SCIENCE

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
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- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
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PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Understand the way of representing visual data and its applications.	II Understanding
CO2	**CO2:** Demonstrate data visualization using combination of various charts.	VI Creating
CO3	**CO3:** Apply visualizing techniques using matplotlib package.	III Applying
CO4	**CO4:** Design effective graphical analysis in R.	IV Analyzing

CO5	**CO5:** Construct data visualizations with Tableau to create customized dashboards and report.	III Applying

Table 1: CO, PO, PSO MAPPING

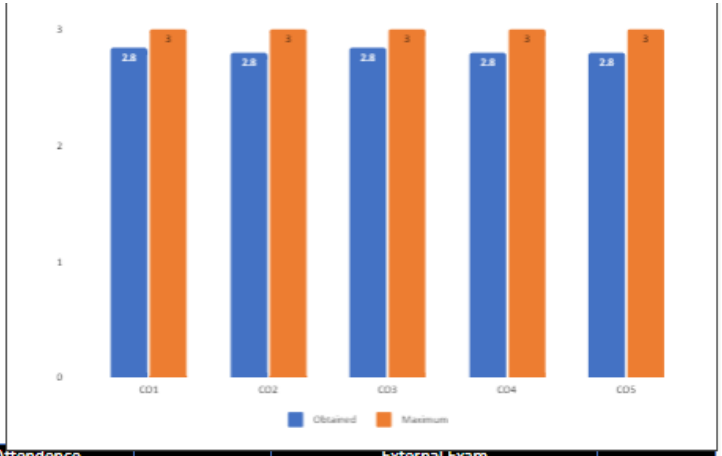
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		H	S	H		S	S		S		H
C02	**H**		H	H		H	H	H		H		H
C03	**S**		H	H	H	H	H	H		H		H
C04	**H**		H	H	S	S	H	H		H		S
C05	**H**		H	H	S		S	H		H		H

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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	70.0	1.0	2.6	100.0	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	70.0	1.0	2.5	100.0	3.0	3.0	2.8
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	70.0	1.0	2.6	100.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	70.0	1.0	2.5	100.0	3.0	3.0	2.8
CO5			100.0	3.0	100.0	3.0			100.0	3.0	70.0	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 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		H 2.8	H 2.8	H 2.8
CO3			H 2.84	H 2.84	H 2.84	H 2.84	H 2.84	H 2.84
CO4	H 2.8		H 2.8	H 2.8			H 2.8	H 2.8
CO5	H 2.8		H 2.8	H 2.8				H 2.8
AVERAGE OF COS FOR POS	2.81		2.816	2.81	2.84	2.82	2.813333333	2.81
AVERAGE OF POS	2.8025		2.8112	2.81	2.84	2.82	.81333333	2.81
AVERAGE	2.815290476							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: SOFTWARE ENGINEERING

COURSE CODE: DS21502A

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Explain engineering through various process models.	V Evaluating
CO2	**CO2:** Identify analyze Requirements, Object Oriented and various modeling's.	IV Analyzing
CO3	**CO3:** Categorize design and architecture	IV Analyzing
CO4	**CO4:** Classify Components, golden rules and design evaluation	IV Analyzing

CO5	**CO5:** To understand testing techniques to evaluate quality metrics	II Understanding

Table 1: CO, PO, PSO MAPPING

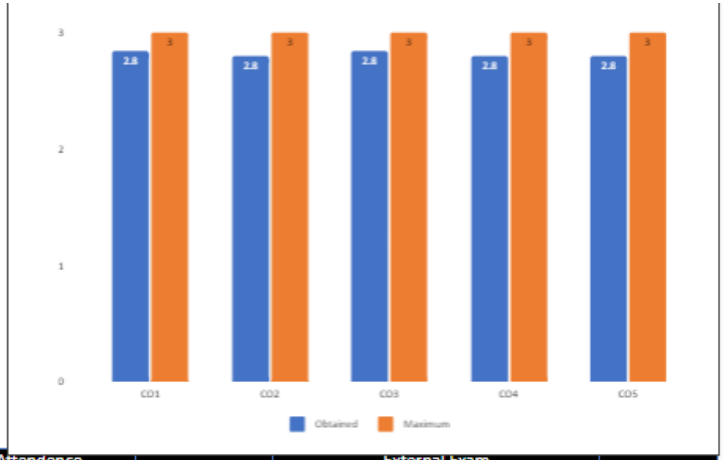
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		H	S	H		S	S		S		H
C02	**H**	**H**	**H**	**H**		**H**	**H**	**H**		**H**	**H**	**H**
C03	**S**		H	H	H	H	H	H	S	H	H	H
C04	**H**	**H**	**H**	**H**	**S**		**H**	**H**	**H**	**H**		**S**
C05	**H**	S	H	H	S		S	H		H		H

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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	69.6	1.0	2.6	100.0	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	69.6	1.0	2.5	100.0	3.0	3.0	2.8
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	69.6	1.0	2.6	100.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	69.6	1.0	2.5	100.0	3.0	3.0	2.8
CO5			100.0	3.0	100.0	3.0			100.0	3.0	69.6	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 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	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	H 2.84	H 2.84
CO4	H 2.8	H 2.8	H 2.8	H 2.8			H 2.8	H 2.8
CO5	H 2.8		H 2.8	H 2.8				H 2.8
AVERAGE OF COS FOR POS	2.81	2.8	2.816	2.81	2.84	2.82	2.813333333	2.81
AVERAGE OF POS	2.8025	2.8	2.8112	2.81	2.84	2.82	.81333333	2.81
AVERAGE	2.813379167							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: TEXT DATA ANALYTICS

COURSE CODE: DS21502B

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions**.**
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1		
CO2		
CO3		
CO4		

CO5		

Table 1: CO, PO, PSO MAPPING

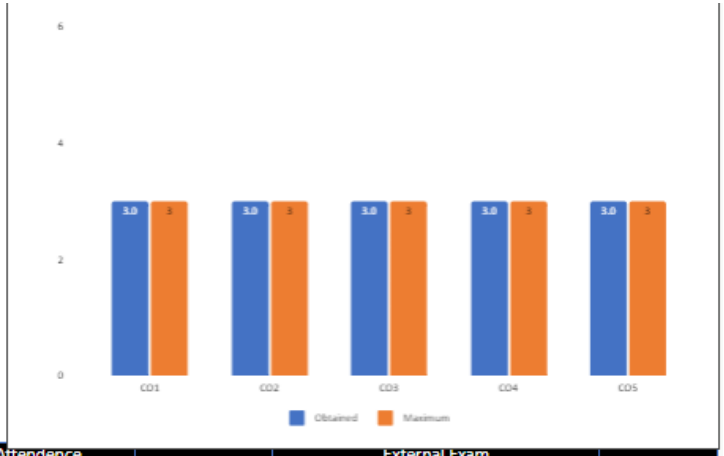
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		H	S	H		S	S				H
C02	**S**	**H**	**S**	**H**		**H**	**H**	**H**		**H**	**H**	**H**
C03	**S**		H	H	H	H	H	H		S	S	H
C04	**H**	**S**	**H**	**H**	**S**		**H**	**S**		**H**		**S**
C05	**H**	H	H	H	S	S	S	H		H		H

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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	96.3	3.0			100.0	3.0	100.0	3.0	100.0	3.0	100.0	3.0	3.0	100.0	3.0	3.0	3.0
CO2	96.3	3.0			100.0	3.0			100.0	3.0	100.0	3.0	3.0	100.0	3.0	3.0	3.0
CO3	96.3	3.0	96.3	3.0	100.0	3.0			100.0	3.0	100.0	3.0	3.0	100.0	3.0	3.0	3.0
CO4			96.3	3.0	100.0	3.0			100.0	3.0	100.0	3.0	3.0	100.0	3.0	3.0	3.0
CO5			96.3	3.0	100.0	3.0			100.0	3.0	100.0	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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 3		H 3		H 3			
CO2		H 3		H 3		H 3	H 3	H 3
CO3			H 3	H 3	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				H 3
AVERAGE OF COS FOR POS	3	3	3	3	3	3	3	3
AVERAGE OF POS	3	3	3	3	3	3	3	3
AVERAGE	3							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: MACHINE LEARNING TECHNIQUES

COURSE CODE: DS18503

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Have a good understanding of the fundamental issues and challenges of machine learning: data, model selection, model complexity, etc.	II Understanding
CO2	**CO2:** Classify the learning algorithms and apply to the given data set.	IV Analyzing
CO3	**CO3:** Identify the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.	IV Analyzing
CO4	**CO4:** Evaluate and interpret the results of the algorithms.	II Understanding

CO5	**CO5:** Design and implement machine learning solutions to classification, regression and clustering problems	IV Applying

Table 1: CO, PO, PSO MAPPING

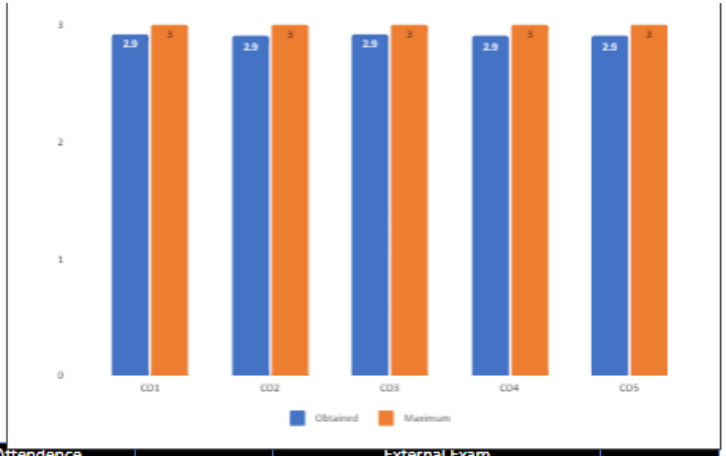
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**		H	S	S		S	S		S		H
C02	**S**		S	H		H	H	S	H	H		H
C03	**H**		H	H	H	H	H	H	H	H	S	H
C04	**H**		H	H	S	S	H	H	S	H	H	S
C05	**H**		H	H	S		S	H		H		H

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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	82.0	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	82.0	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	82.0	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	82.0	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	82.0	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					
CO2				H 2.9		H 2.9	H 2.9	
CO3	H 2.92		H 2.92	H 2.92	H 2.92	H 2.92	H 2.92	H 2.92
CO4	H 2.9		H 2.9	H 2.9			H 2.9	H 2.9
CO5	H 2.9		H 2.9	H 2.9				H 2.9
AVERAGE OF COS FOR POS	2.91		2.91	2.905	2.92	2.91	2.906666667	2.906666667
AVERAGE OF POS	2.9075		2.9075	2.905	2.92	2.91	.90666666	.90666666
AVERAGE	2.909047619							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: Artificial Intelligence

COURSE CODE: DS21504

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3. Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6. Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.	IV Applying
CO2	**CO2:** Understand predicate logic and transform the real life information in different representation.	II Understanding
CO3	**CO3:** Understand formal methods of knowledge representation.	II Understanding
CO4	**CO4:** Analyze the underlying mathematical relationships and build expert system.	IV Analyzing

CO5	**CO5:** Demonstrate Knowledge representation techniques.	V Evaluating

Table 1: CO, PO, PSO MAPPING

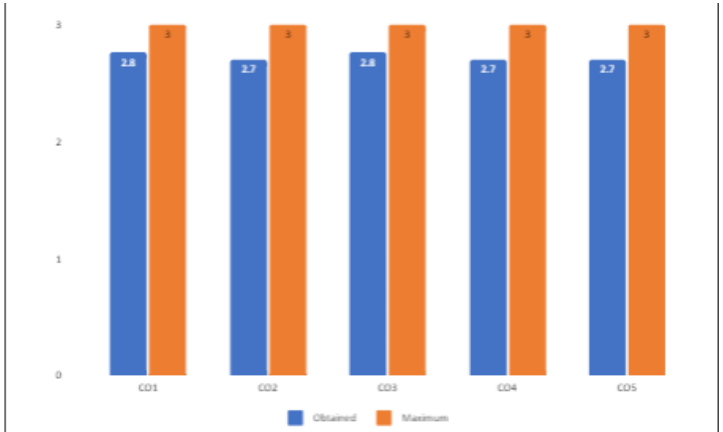
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	H	H	H	S	H	S	S	H		S		H
C02	H	S	H	H		H	H	S	H	H	H	H
C03	S	H	H	H	H	H	H	H	S	H	H	H
C04	H		H	H	S	S	H	S		H		S
C05	H		H	H	S	H	S	H		H	S	H

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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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	46.0	0.0	2.4	100.0	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	46.0	0.0	2.3	100.0	3.0	3.0	2.7
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	46.0	0.0	2.4	100.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	46.0	0.0	2.3	100.0	3.0	3.0	2.7
CO5			100.0	3.0	100.0	3.0			100.0	3.0	46.0	0.0	2.3	100.0	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 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	H 2.76		H 2.76			H 2.76
CO2	H 2.7		H 2.7	H 2.7		H 2.7	H 2.7	
CO3		H 2.76	H 2.76	H 2.76	H 2.76	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	H 2.7		H 2.7		H 2.7
AVERAGE OF COS FOR POS	2.715	2.76	2.724	2.715	2.76	2.72	2.72	2.74
AVERAGE OF POS	2.70375	2.76	2.7168	2.715	2.76	2.72	2.72	.73333333
AVERAGE	2.728610417							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: APPLIED STATISTICS

COURSE CODE: DS21507

CREDITS: 4

DEPARTMENT: B. Sc. Computer Data Science and Data Analytics Engineering

Programme Outcomes – (B. Sc.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.
- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO3.Problem analysis:** Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO4. Modern tool usage:** Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.
- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.
- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:
PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:**	
CO2	**CO2:**	
CO3	**CO3:**	
CO4	**CO4:**	

CO5	**CO5:**	

Table 1: CO, PO, PSO MAPPING

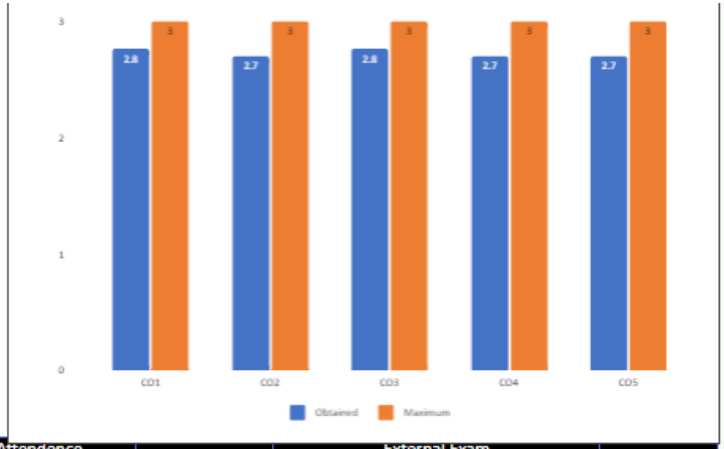
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PS01	PS02	PS03	PS04
C01	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**S**		**S**		**H**
C02	**H**	**S**	**S**	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**H**
C03	**H**		H	H	H	H	H	H	S	H		H
C04	**S**		**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	**S**
C05	**H**		H	H	S		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 75%- 65%= 1
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		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
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CO2	100.0	3.0			100.0	3.0			100.0	3.0	58.0	0.0	2.3	100.0	3.0	3.0	2.7
CO3	100.0	3.0	94.0	3.0	100.0	3.0			100.0	3.0	58.0	0.0	2.4	100.0	3.0	3.0	2.8
CO4			94.0	3.0	100.0	3.0			100.0	3.0	58.0	0.0	2.3	100.0	3.0	3.0	2.7
CO5			94.0	3.0	100.0	3.0			100.0	3.0	58.0	0.0	2.3	100.0	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

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CO2	H 2.7			H 2.7	H 2.7	H 2.7	H 2.7	H 2.7
CO3	H 2.76		H 2.76	H 2.76	H 2.76	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	H 2.7				H 2.7
AVERAGE OF COS FOR POS	2.73	2.76	2.73	2.715	2.74	2.73	2.72	2.72
AVERAGE OF POS	2.7225	2.76	2.7225	2.715	.73333333	2.7225	2.72	2.72
AVERAGE	2.726979167							