FIRST SEMESTER-WISE DISTRIBUTION OF SUBJECTS
DEPARTMENT OF COMPUTER SCIENCE
B.Sc. (COMPUTER SCIENCE AND INFORMATION TECHOLOGY)

Subject code	Title of the subject
EN23101	GENERALENGLISH I
VE18101	VALUE EDUCATION & PERSONALITY DEVELOPMENT
BS19101	MATHEMATICS I
BS18129	ENGINEERING DRAWING AND ENGINEERING WORKSHOP
CSIT18101	ELECTRONIC DEVICES AND CIRCUITS
BS19123	PROBLEM SOLVING AND PROGRAMMING IN C

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: GENERALENGLISH I

COURSE CODE: EN23101

CREDITS: 3

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 analyse 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, and 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: Recognize the need and ability to engage in independent and lifelong Learning in the context of technological change.

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1:** Distinguish between words which are either spelt or pronounced alike, yet render distinct meanings; imparting a sound clarity on everyday usage and miscommunications embedded in language	III (APPLY)
CO2	**CO2:**Improve diction and gain understanding on the tense component, a pivotal constituent for language structuring.	IV(ANALYZE)
CO3	**CO3:** Identify with economical word constructions, paying specific attention to vocabulary building in English	III (APPLY)
CO4	**CO4:** Learn subject-verb agreement, the basic part involved in sentence constructing to improve their linguistic skills	VI(CREATE)
CO5	**CO5:** Polish their language efficiency through the grammar component of commonly confused and misspelt words, and errors related to vocabulary and different aspects of grammar, which would be seemingly helpful for language delivery	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	**Programme Outcomes**								**Program Specific outcomes**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**P08**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	

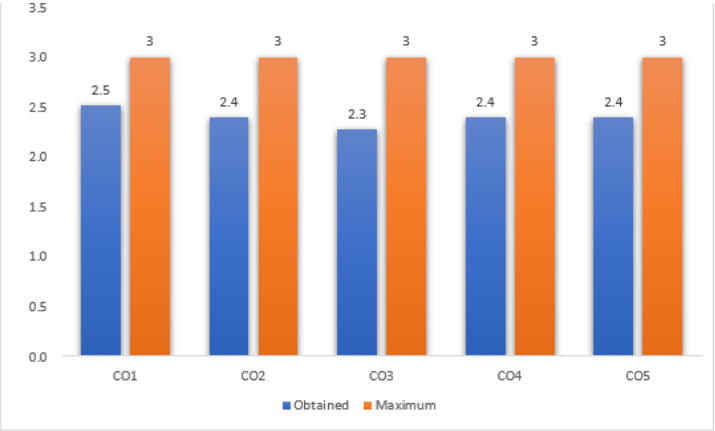
1	**H**		**H**	**H**			**S**	**H**		**H**		**H**	
2	**S**		**S**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	
4	**S**		**S**	**H**	**H**		**S**	**H**		**H**		**H**	
5	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	

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	0.0	0.0			96.0	3.0	96.0	3.0	100.0	3.0	16.0	0.0	1.8	100.0	3.0	3.0	2.5
CO2	0.0	0.0			96.0	3.0			100.0	3.0	16.0	0.0	1.5	100.0	3.0	3.0	2.4
CO3	0.0	0.0	0.0	0.0	96.0	3.0			100.0	3.0	16.0	0.0	1.2	100.0	3.0	3.0	2.3
CO4			0.0	0.0	96.0	3.0			100.0	3.0	16.0	0.0	1.5	100.0	3.0	3.0	2.4
CO5			0.0	0.0	96.0	3.0			100.0	3.0	16.0	0.0	1.5	100.0	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.4

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.52		H 2.52					
CO2	H 2.4		H 2.4	H 2.4			H 2.4	
CO3	H 2.28		H 2.28	H 2.28	H 2.28		H 2.28	
CO4	H 2.4		H 2.4	H 2.4			H 2.4	
CO5	H 2.4		H 2.4	H 2.4				H 2.4
AVERAGE OF COS FOR POS	2.4		2.4	2.37	2.28		2.36	2.4
AVERAGE OF POS	2.376		2.376	2.37	2.28		2.36	2.4
AVERAGE	2.360333333							

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 SCIENCE AND INFORMATION TECHNOLOGY

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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- **PO4:** Modern tool usage: Create, select and apply appropriate techniques, resources, and modern technology and IT tools to complex science and technological activities.
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- **PO8:** Life-long learning: Recognize the need and ability to engage in independent and lifelong Learning in the context of technological change.

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse 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	III (APPLY)
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	IV(ANALYZE)
CO3	**CO3:** They will able to **understand** the importance of concern for others and sritique the various problems that deter the growth of the society	III (APPLY)
CO4	**CO4:** The students will be able to recognize the traits of a good personality and practice Self exploration	VI(CREATE)
CO5	**CO5:** Students will be able to interpret the purpose of life and goal setting and demonstrate self-management	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	**Programme Outcomes**								**Program Specific outcomes**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**P08**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	

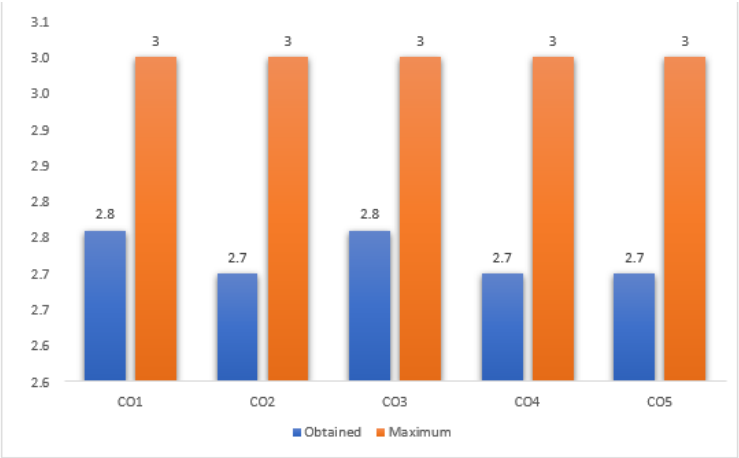
1	**H**		**H**	**S**			**S**	**S**		**S**		**H**	
2	**H**		**H**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**H**		**H**	**S**		**H**		**H**	
4	**S**		**H**	**H**	**S**		**S**	**S**		**H**		**S**	
5	**H**		**H**	**H**	**S**		**S**	**H**		**H**		**H**	

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	98.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	51.0	0.0	2.4	100.0	3.0	3.0	2.8
CO2	98.0	3.0			100.0	3.0			100.0	3.0	51.0	0.0	2.3	100.0	3.0	3.0	2.7
CO3	98.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	51.0	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	51.0	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	51.0	0.0	2.3	100.0	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.76		H 2.76					
CO2	H 2.7		H 2.7	H 2.7			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	H 2.7			H 2.7	
CO5	H 2.7		H 2.7	H 2.7				H 2.7
AVERAGE OF COS FOR POS	2.724		2.724	2.715	2.76		2.72	2.7
AVERAGE OF POS	2.7168		2.7168	2.715	2.76		2.72	2.7
AVERAGE	2.721433333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE:M A T H E M A T I C S I

COURSE CODE: BS19101

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

- **PO1**: Scientific Knowledge. Apply the knowledge of Science, Mathematics, Engineering & Technology fundamentals to solve the complex problems.
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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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Categorize 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.	III (APPLY)
CO2	CO2: Analyze and Solve basic application problems described by first order differential equations such orthogonal trajectories	III (APPLY)
CO3	CO3: Solve second order Homogeneous Equations with Constant Coefficients. Obtain exact and numerical solutions using differential equations technology	III (APPLY)
CO4	CO4: Combine the necessary Laplace transform techniques to solve second-order ordinary differential equations. Solve the Laplace transform of standard functions	V(EVALUATE)
CO5	CO5: Analyze a Fourier series of a given periodic function by evaluating Fourier coefficients.	III (APPLY)

Table 1: CO, PO, PSO MAPPING

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

2	**S**	**S**	**S**	**S**	**S**		**S**	**S**	**H**	**H**	**S**	**H**	
3	**S**	**S**	**H**	**H**	**H**	**S**	**S**	**H**	**H**	**H**	**S**	**S**	
4	**H**	**H**	**H**	**H**	**S**			**S**	**H**	**H**	**S**	**S**	
5	**H**	**S**	**H**	**H**	**S**			**H**	**H**	**H**	**S**	**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
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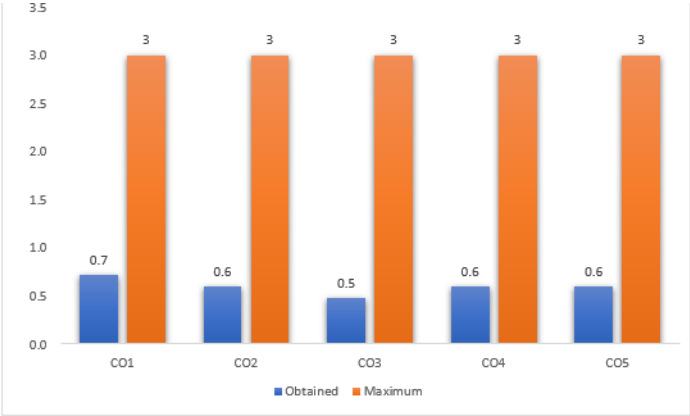

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	20.0	0.0	1.8	58.0	0.0	0.0	0.7
CO2	0.0	0.0			100.0	3.0			100.0	3.0	20.0	0.0	1.5	58.0	0.0	0.0	0.6
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	20.0	0.0	1.2	58.0	0.0	0.0	0.5
CO4			0.0	0.0	100.0	3.0			100.0	3.0	20.0	0.0	1.5	58.0	0.0	0.0	0.6
CO5			0.0	0.0	100.0	3.0			100.0	3.0	20.0	0.0	1.5	58.0	0.0	0.0	0.6

AVERAGE	AVERAGE
0	0.6

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 0.72		H 0.72					
CO2	H 0.6		H 0.6	H 0.6			H 0.6	
CO3	H 0.48		H 0.48	H 0.48	H 0.48		H 0.48	
CO4	H 0.6		H 0.6	H 0.6			H 0.6	
CO5	H 0.6		H 0.6	H 0.6				H 0.6
AVERAGE OF COS FOR POS	0.6		0.6	0.57	0.48		0.56	0.6
AVERAGE OF POS	0.576		0.576	0.57	0.48		0.56	0.6
AVERAGE	0.560333333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ELECTRONIC DEVICES AND CIRCUITS
COURSE CODE: CSIT18101 **CREDITS: 4**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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.
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- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
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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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1	CO1: Define and classify the various electronic components	IV(ANALYZE)
CO2	CO2: Explain the functioning of electronic devices	V(EVALUATE)
CO3	CO3: Construct and understand the functioning of BJT CO4: Apply the behaviour of transistor in building amplifier CO5: Explain the operation of amplifiers and oscillators	II(UNDERSTAND)
CO4	CO4: Apply the behavior of transistor in building amplifier	IV(ANALYZE))
CO5	CO5: Explain the operation of amplifiers and oscillators	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

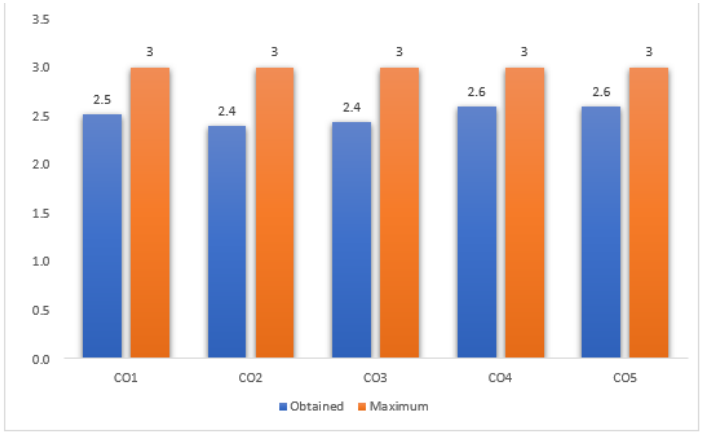
Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	H	H	H			S	H	H	H	H	H	
2	H	S	H	H	H		H	H	H	H	H	H	
3	H	S	S	H	S	S	H	H	H	H	H	H	
4	H	S	H	H	S	S	H	H	H	H	H	H	
5	H	S	H	H	S	S	H	S	H	H	S	S	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	55.1	0.0			100.0	3.0	100.0	3.0	100.0	3.0	0.0	0.0	1.8	98.0	3.0	3.0	2.5
CO2	55.1	0.0			100.0	3.0			100.0	3.0	0.0	0.0	1.5	98.0	3.0	3.0	2.4
CO3	55.1	0.0	83.7	2.0	100.0	3.0			100.0	3.0	0.0	0.0	1.6	98.0	3.0	3.0	2.4
CO4			83.7	2.0	100.0	3.0			100.0	3.0	0.0	0.0	2.0	98.0	3.0	3.0	2.6
CO5			83.7	2.0	100.0	3.0			100.0	3.0	0.0	0.0	2.0	98.0	3.0	3.0	2.6

AVERAGE	AVERAGE
3	2.512

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.52		H 2.52					
CO2	H 2.4		H 2.4	H 2.4			H 2.4	
CO3	H 2.44		H 2.44	H 2.44	H 2.44		H 2.44	
CO4	H 2.6		H 2.6	H 2.6			H 2.6	
CO5	H 2.6		H 2.6	H 2.6				H 2.6
AVERAGE OF COS FOR POS	2.512		2.512	2.51	2.44		2.48	2.6
AVERAGE OF POS	2.5104		2.5104	2.51	2.44		2.48	2.6
AVERAGE	2.508466667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PROBLEM SOLVING AND PROGRAMMING IN C

COURSE CODE: BS19123

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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

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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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	**CO1**: **Explain Basic** concepts of C programming	VI(CREATE)
CO2	**CO2**: **Develop** programs using 'C' control structures.	VI(CREATE)
CO3	**CO3**: **Organise** data using arrays and strings	VI(CREATE)
CO4	**CO4**: **Sub divides** larger problems into smaller ones using 'C' functions.	VI(CREATE)
CO5	**CO5**: **Create** programs using the concept of structures, union and file handling in 'C'.	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

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

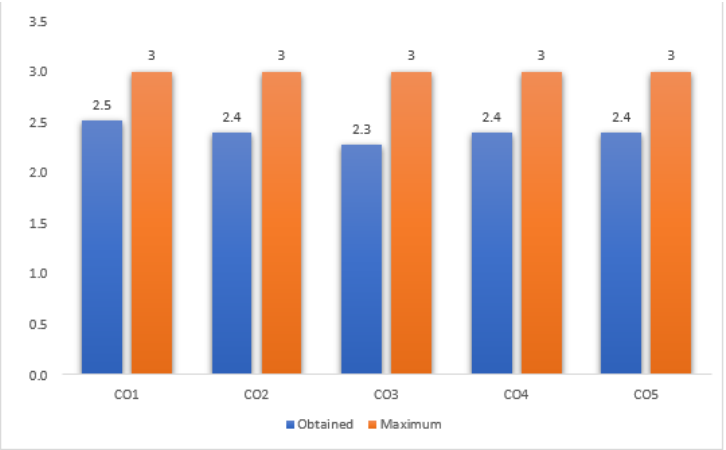
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**		**H**	**H**	**H**		**H**	**S**	**H**	**H**		**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	20.0	0.0	1.8	90.0	3.0	3.0	2.5
CO2	0.0	0.0			100.0	3.0			100.0	3.0	20.0	0.0	1.5	90.0	3.0	3.0	2.4
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	20.0	0.0	1.2	90.0	3.0	3.0	2.3
CO4			0.0	0.0	100.0	3.0			100.0	3.0	20.0	0.0	1.5	90.0	3.0	3.0	2.4
CO5			0.0	0.0	100.0	3.0			100.0	3.0	20.0	0.0	1.5	90.0	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.4

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.52		H 2.52					
CO2	H 2.4		H 2.4	H 2.4			H 2.4	
CO3	H 2.28		H 2.28	H 2.28	H 2.28		H 2.28	
CO4	H 2.4		H 2.4	H 2.4			H 2.4	
CO5	H 2.4		H 2.4	H 2.4				H 2.4
AVERAGE OF COS FOR POS	2.4		2.4	2.37	2.28		2.36	2.4
AVERAGE OF POS	2.376		2.376	2.37	2.28		2.36	2.4
AVERAGE	2.360333333							

THIRD SEMESTER-WISE DISTRIBUTION OF SUBJECTS
DEPARTMENT OF COMPUTER SCIENCE
B.Sc. (COMPUTER SCIENCE & INFORMATION TECHNOLOGY)

Subject code	Title of the subject
ES23301	ENVIRONMENTAL STUDIES AND GENDER SENSITIZATION
CSIT23301	PRINCIPLES OF ONFORMATION SECURITY
BS18335	DISCRETE MATHEMATICS
CSIT23302	COMPUTER NETWORKS
BS18336	JAVA PROGRAMMING
GE	GENERAL ELECTIVE

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ENVIRONMENTAL STUDIES & GENDER SENSITIZATION

COURSE CODE: ES18101

CREDITS: 3

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 analyse 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, and 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: Recognize the need and ability to engage in independent and lifelong Learning in the context of technological change.

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse 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.	III (APPLY)
CO2	CO2: Understand the pollution problems and apply the environmental science knowledge on solid waste management, disaster management.	IV(ANALYZE)
CO3	CO3: Apply the environmental science knowledge to improve the resources and Evaluate and understand the sustainable environmental conditions and control methods.	III (APPLY)
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.	VI(CREATE)
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	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	**Programme Outcomes**								**Program Specific outcomes**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**P08**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	

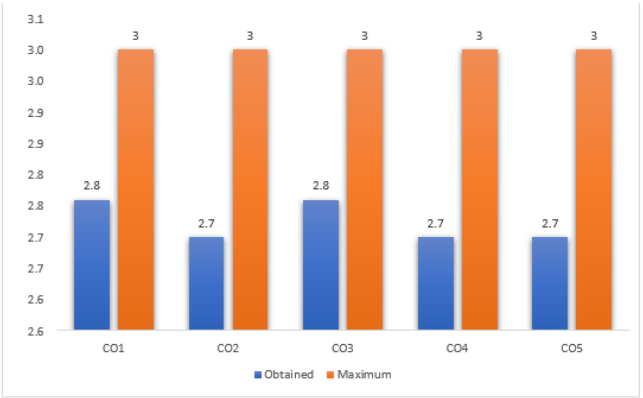
1	**H**		**H**	**H**			**S**	**H**		**H**		**H**	
2	**S**		**S**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	
4	**S**		**S**	**H**	**H**		**S**	**H**		**H**		**H**	
5	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	

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	95.8	3.0			102.1	3.0	102.1	3.0	102.1	3.0	2.1	0.0	2.4	93.8	3.0	3.0	2.8
CO2	95.8	3.0			102.1	3.0			102.1	3.0	2.1	0.0	2.3	93.8	3.0	3.0	2.7
CO3	95.8	3.0	97.9	3.0	102.1	3.0			102.1	3.0	2.1	0.0	2.4	93.8	3.0	3.0	2.8
CO4			97.9	3.0	102.1	3.0			102.1	3.0	2.1	0.0	2.3	93.8	3.0	3.0	2.7
CO5			97.9	3.0	102.1	3.0			102.1	3.0	2.1	0.0	2.3	93.8	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.76		H 2.76					
CO2	H 2.7		H 2.7	H 2.7			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	H 2.7			H 2.7	
CO5	H 2.7		H 2.7	H 2.7				H 2.7
AVERAGE OF COS FOR POS	2.724		2.724	2.715	2.76		2.72	2.7
AVERAGE OF POS	2.7168		2.7168	2.715	2.76		2.72	2.7
AVERAGE	2.721433333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PRINCIPLES OF INFORMATION SECURITY

COURSE CODE: CSIT23301

CREDITS: 2

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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: Recognize the need and ability to engage in independent and lifelong Learning in the context of technological change.

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1:Explain the concepts of confidentiality ,availability and integrity(CIA) in context of Information	III (APPLY)
CO2	CO2: Identify the risks, assess and risk control strategies.	IV(ANALYZE)
CO3	CO3: Demonstrate expertise in configuring host and network level technical security control to include host firewall user access control, host logging ,network filtering , intrusion detection and prevention	III (APPLY)
CO4	CO4: Analyze systems, tools ,methods and techniques for securing digital information within an organization	VI(CREATE)
CO5	CO5: Develop encryption and decryption techniques	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	**Programme Outcomes**								**Program Specific outcomes**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**P08**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	

1	**H**		**H**	**S**			**S**	**S**		**S**		**H**	
2	**H**		**H**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**H**		**H**	**S**		**H**		**H**	
4	**S**		**H**	**H**	**S**		**S**	**S**		**H**		**S**	
5	**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
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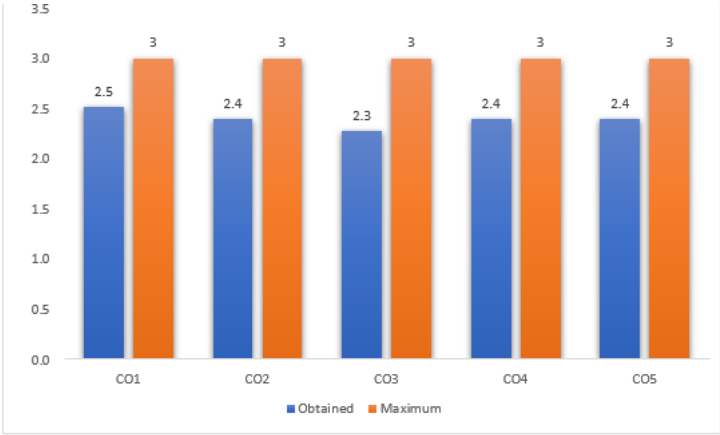
Pass percent of less than 65%= 0



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	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	6.5	0.0	1.8	95.7	3.0	3.0	2.5
CO2	0.0	0.0			100.0	3.0			100.0	3.0	6.5	0.0	1.5	95.7	3.0	3.0	2.4
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	6.5	0.0	1.2	95.7	3.0	3.0	2.3
CO4			0.0	0.0	100.0	3.0			100.0	3.0	6.5	0.0	1.5	95.7	3.0	3.0	2.4
CO5			0.0	0.0	100.0	3.0			100.0	3.0	6.5	0.0	1.5	95.7	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.4

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.52		H 2.52					
CO2	H 2.4		H 2.4	H 2.4			H 2.4	
CO3	H 2.28		H 2.28	H 2.28	H 2.28		H 2.28	
CO4	H 2.4		H 2.4	H 2.4			H 2.4	
CO5	H 2.4		H 2.4	H 2.4				H 2.4
AVERAGE OF COS FOR POS	2.4		2.4	2.37	2.28		2.36	2.4
AVERAGE OF POS	2.376		2.376	2.37	2.28		2.36	2.4
AVERAGE	2.360333333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DISCRETE MATHEMATICS
COURSE CODE: BS18335 **CREDITS: 4**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Develop understanding of Logic Sets and Functions	IV(ANALYZE)
CO2	CO2: Evaluate and apply the fundamental concepts in graph theory	V(EVALUATE)
CO3	CO3: Develop an understanding of how graph and tree concepts are used to solve problems arising in the computer science.	II(UNDERSTAND)
CO4	CO4: Express the concepts and results of Number Theory.	IV(ANALYZE))
CO5	CO5: Identify methods and techniques used in number theory	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

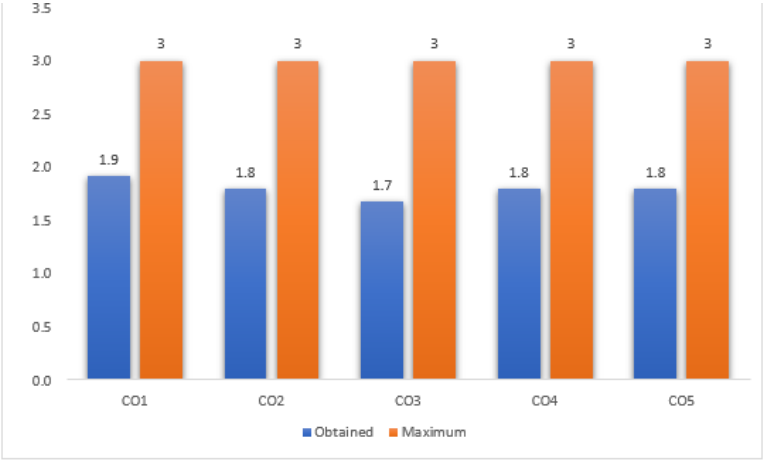
Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	H	H	H			S	H	H	H	H	H	
2	H	S	H	H	H		H	H	H	H	H	H	
3	H	S	S	H	S	S	H	H	H	H	H	H	
4	H	S	H	H	S	S	H	H	H	H	H	H	
5	H	S	H	H	S	S	H	S	H	H	S	S	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	0.0	0.0			95.7	3.0	91.3	3.0	87.0	3.0	6.5	0.0	1.8	76.1	2.0	2.0	1.9
CO2	0.0	0.0			95.7	3.0			87.0	3.0	6.5	0.0	1.5	76.1	2.0	2.0	1.8
CO3	0.0	0.0	0.0	0.0	95.7	3.0			87.0	3.0	6.5	0.0	1.2	76.1	2.0	2.0	1.7
CO4			0.0	0.0	95.7	3.0			87.0	3.0	6.5	0.0	1.5	76.1	2.0	2.0	1.8
CO5			0.0	0.0	95.7	3.0			87.0	3.0	6.5	0.0	1.5	76.1	2.0	2.0	1.8

AVERAGE	AVERAGE
2	1.8

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 1.92		H 1.92					
CO2	H 1.8		H 1.8	H 1.8			H 1.8	
CO3	H 1.68		H 1.68	H 1.68	H 1.68		H 1.68	
CO4	H 1.8		H 1.8	H 1.8			H 1.8	
CO5	H 1.8		H 1.8	H 1.8				H 1.8
AVERAGE OF COS FOR POS	1.8		1.8	1.77	1.68		1.76	1.8
AVERAGE OF POS	1.776		1.776	1.77	1.68		1.76	1.8
AVERAGE	1.760333333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: COMPUTER NETWORKS

COURSE CODE: CSIT23302

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Identify basic computer network topologies and protocols and explain data communication system components	VI(CREATE)
CO2	CO2: Classify different error detecting techniques	VI(CREATE)
CO3	CO3: Construct subnetting and routine mechanisms	VI(CREATE)
CO4	CO4: Sketch the routing protocols and analyses how to assign the IP addresses for the given network	VI(CREATE)
CO5	CO5: Develop network design and implemetation	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

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

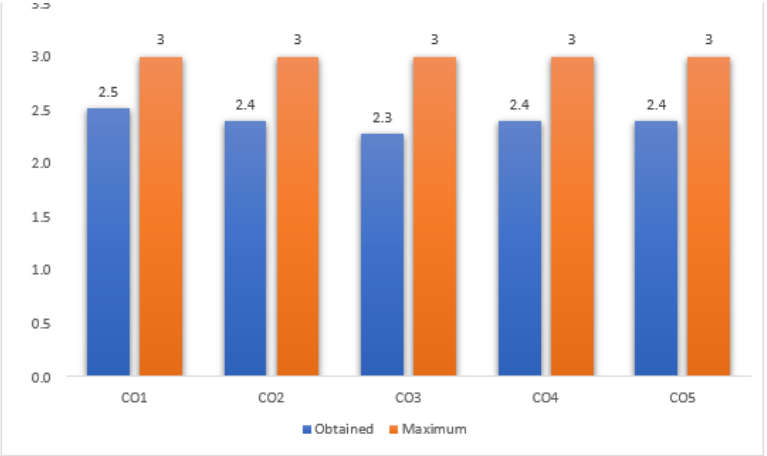
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**		**H**	**H**	**H**		**H**	**S**	**H**	**H**		**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	8.7	0.0	1.8	91.3	3.0	3.0	2.5
CO2	0.0	0.0			100.0	3.0			100.0	3.0	8.7	0.0	1.5	91.3	3.0	3.0	2.4
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	8.7	0.0	1.2	91.3	3.0	3.0	2.3
CO4			0.0	0.0	100.0	3.0			100.0	3.0	8.7	0.0	1.5	91.3	3.0	3.0	2.4
CO5			0.0	0.0	100.0	3.0			100.0	3.0	8.7	0.0	1.5	91.3	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.4

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.52		H 2.52					
CO2	H 2.4		H 2.4	H 2.4			H 2.4	
CO3	H 2.28		H 2.28	H 2.28	H 2.28		H 2.28	
CO4	H 2.4		H 2.4	H 2.4			H 2.4	
CO5	H 2.4		H 2.4	H 2.4				H 2.4
AVERAGE OF COS FOR POS	2.4		2.4	2.37	2.28		2.36	2.4
AVERAGE OF POS	2.376		2.376	2.37	2.28		2.36	2.4
AVERAGE	2.360333333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: JAVA PROGRAMMING **COURSE CODE: BS18336** **CREDITS: 3**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY
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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Differentiate between object-oriented programming and procedure-oriented programming	I (REMEMBER)
CO2	CO2: Apply object-oriented programming features for solving a given problem.	II(UNDERSTAND)
CO3	CO3: Select an appropriate exception handling depending on application.	II(UNDERSTAND)
CO4	CO4: Design file operations using java standard library	VI(CREATE)
CO5	CO5: Develop interactive programs using applet and swing	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

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

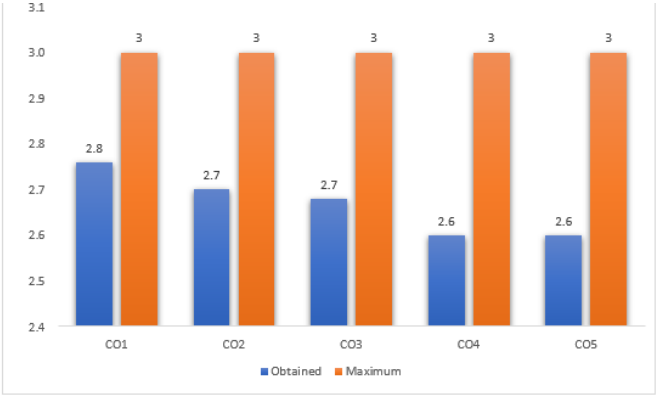
H: Highly Supportive **S: Supportive**

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	85.4	3.0			102.1	3.0	102.1	3.0	97.9	3.0	4.2	0.0	2.4	91.7	3.0	3.0	2.8
CO2	85.4	3.0			102.1	3.0			97.9	3.0	4.2	0.0	2.3	91.7	3.0	3.0	2.7
CO3	85.4	3.0	81.3	2.0	102.1	3.0			97.9	3.0	4.2	0.0	2.2	91.7	3.0	3.0	2.7
CO4			81.3	2.0	102.1	3.0			97.9	3.0	4.2	0.0	2.0	91.7	3.0	3.0	2.6
CO5			81.3	2.0	102.1	3.0			97.9	3.0	4.2	0.0	2.0	91.7	3.0	3.0	2.6

AVERAGE	AVERAGE
3	2.668

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.76		H 2.76					
CO2	H 2.7		H 2.7	H 2.7			H 2.7	
CO3	H 2.68		H 2.68	H 2.68	H 2.68		H 2.68	
CO4	H 2.6		H 2.6	H 2.6			H 2.6	
CO5	H 2.6		H 2.6	H 2.6				H 2.6
AVERAGE OF COS FOR POS	2.668		2.668	2.645	2.68		2.66	2.6
AVERAGE OF POS	2.6496		2.6496	2.645	2.68		2.66	2.6
AVERAGE	2.647366667							

FIFTH SEMESTER-WISE DISTRIBUTION OF SUBJECTS
DEPARTMENT OF COMPUTER SCIENCE
B.Sc. (COMPUTER SYSTEMS & ENGINEERING)

Subject Code	Title of the Subject
ORY	
CE21501A	Artificial Intelligence (DSE-1)
CE21501B	Principles of Information Security (DSE-1)
CE21502	Ethical Hacking (SEC-4)
CE18503	Data Base Management Systems (Core-14)
CE21504	Linux Administration (Core-15)
CE21505	Software Engineering (Core-16)
BS18545	Computer Networks (Core-17)

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ARTIFICIAL INTELLIGENCE

COURSE CODE: CE21501A

CREDITS: 3

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 analyse complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Explain basic concepts of AI and search techniques	III (APPLY)
CO2	CO2: Demonstrate various heuristic techniques and constraint satisfaction problem.	IV(ANALYZE)
CO3	CO3: Develop proofs in first order and propositional logic using resolution and unification	III (APPLY)
CO4	CO4: Choose appropriate knowledge representation techniques	VI(CREATE)
CO5	CO5: Design approaches to planning	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	**Programme Outcomes**								**Program Specific outcomes**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**P08**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	

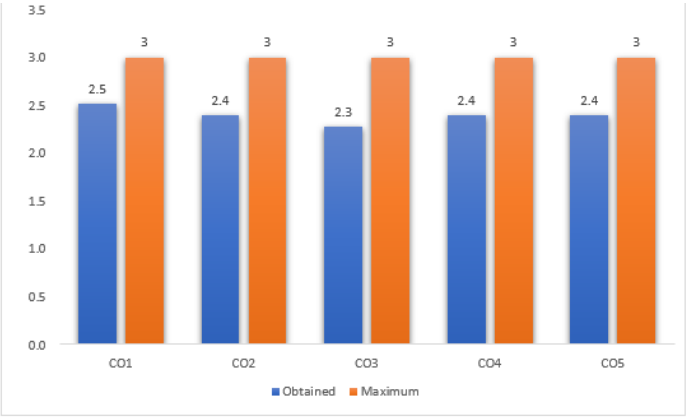
1	**H**		**H**	**H**			**S**	**H**		**H**		**H**	
2	**S**		**S**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	
4	**S**		**S**	**H**	**H**		**S**	**H**		**H**		**H**	
5	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	

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	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	3.4	0.0	1.8	96.6	3.0	3.0	2.5
CO2	0.0	0.0			100.0	3.0			100.0	3.0	3.4	0.0	1.5	96.6	3.0	3.0	2.4
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	3.4	0.0	1.2	96.6	3.0	3.0	2.3
CO4			0.0	0.0	100.0	3.0			100.0	3.0	3.4	0.0	1.5	96.6	3.0	3.0	2.4
CO5			0.0	0.0	100.0	3.0			100.0	3.0	3.4	0.0	1.5	96.6	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.4

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.52		H 2.52					
CO2	H 2.4		H 2.4	H 2.4			H 2.4	
CO3	H 2.28		H 2.28	H 2.28	H 2.28		H 2.28	
CO4	H 2.4		H 2.4	H 2.4			H 2.4	
CO5	H 2.4		H 2.4	H 2.4				H 2.4
AVERAGE OF COS FOR POS	2.4		2.4	2.37	2.28		2.36	2.4
AVERAGE OF POS	2.376		2.376	2.37	2.28		2.36	2.4
AVERAGE	2.360333333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PRINCIPLES OF INFORMATION SECURITY

COURSE CODE: CE21501B

CREDITS: 2

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 analyse complex scientific problems reaching substantiated conclusions using first princples of mathematics, natural sciences, and engineering sciences.
- **PO4:** Modern tool usage: Create, select and apply appropriate techniques, resources, and 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: Recognize the need and ability to engage in independent and lifelong Learning in the context of technological change.

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Explain concepts of Security System Development Life Cycle, Need for Security	III (APPLY)
CO2	CO2: Identify the risk, assess and risk control strategies.	IV(ANALYZE)
CO3	CO3: Demonstrate expertise in configuring host and network level technical security controls to include host firewalls, user access controls, host logging, network filtering, intrusion detection and prevention	III (APPLY)
CO4	CO4: Analyze systems, tools, methods, and techniques for securing digital information within an organization	VI(CREATE)
CO5	CO5: Explain the concepts of Security Considerations in Mobile and Wireless Computing	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

Course outcomes	**Programme Outcomes**								**Program Specific outcomes**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**P08**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	

1	**H**		**H**	**S**			**S**	**S**		**S**		**H**	
2	**H**		**H**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**H**		**H**	**S**		**H**		**H**	
4	**S**		**H**	**H**	**S**		**S**	**S**		**H**		**S**	
5	**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
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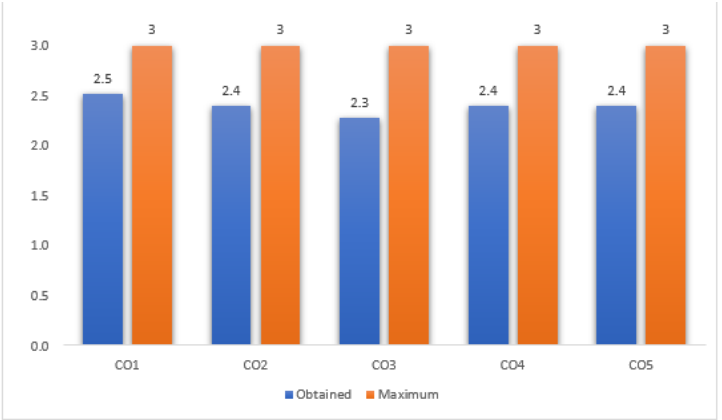
Pass percent of less than 65%= 0



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	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	0.0	0.0	1.8	100.0	3.0	3.0	2.5
CO2	0.0	0.0			100.0	3.0			100.0	3.0	0.0	0.0	1.5	100.0	3.0	3.0	2.4
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	0.0	0.0	1.2	100.0	3.0	3.0	2.3
CO4			0.0	0.0	100.0	3.0			100.0	3.0	0.0	0.0	1.5	100.0	3.0	3.0	2.4
CO5			0.0	0.0	100.0	3.0			100.0	3.0	0.0	0.0	1.5	100.0	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.4

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.52		H 2.52					
CO2	H 2.4		H 2.4	H 2.4			H 2.4	
CO3	H 2.28		H 2.28	H 2.28	H 2.28		H 2.28	
CO4	H 2.4		H 2.4	H 2.4			H 2.4	
CO5	H 2.4		H 2.4	H 2.4				H 2.4
AVERAGE OF COS FOR POS	2.4		2.4	2.37	2.28		2.36	2.4
AVERAGE OF POS	2.376		2.376	2.37	2.28		2.36	2.4
AVERAGE	2.360333333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE : ETHICAL HACKING

COURSE CODE: CE21502

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

- **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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- **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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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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Explain essential terminology and phases of hacking	III (APPLY)
CO2	CO2: Analyze how to perform reconnaissance in various organizations	III (APPLY)
CO3	CO3: Identify different types of scanning methods	III (APPLY)
CO4	CO4: Explain the maintenance of access gained through hacking	V(EVALUATE)
CO5	CO5: Design techniques used to avoid the traces of attacks in order to escape from the legal Punishment by a malicious hacker	III (APPLY)

Table 1: CO, PO, PSO MAPPING

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

2	**S**	**S**	**S**	**S**	**S**		**S**	**S**	**H**	**H**	**S**	**H**	
3	**S**	**S**	**H**	**H**	**H**	**S**	**S**	**H**	**H**	**H**	**S**	**S**	
4	**H**	**H**	**H**	**H**	**S**			**S**	**H**	**H**	**S**	**S**	
5	**H**	**S**	**H**	**H**	**S**			**H**	**H**	**H**	**S**	**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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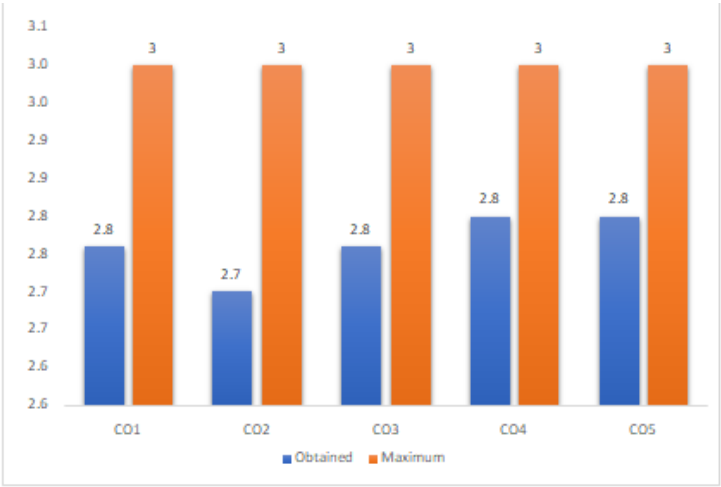


co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	84.0	2.0			98.0	3.0	100.0	3.0	100.0	3.0	72.0	1.0	2.4	94.0	3.0	3.0	2.8
CO2	84.0	2.0			98.0	3.0			100.0	3.0	72.0	1.0	2.3	94.0	3.0	3.0	2.7
CO3	84.0	2.0	96.0	3.0	98.0	3.0			100.0	3.0	72.0	1.0	2.4	94.0	3.0	3.0	2.8
CO4			96.0	3.0	98.0	3.0			100.0	3.0	72.0	1.0	2.5	94.0	3.0	3.0	2.8
CO5			96.0	3.0	98.0	3.0			100.0	3.0	72.0	1.0	2.5	94.0	3.0	3.0	2.8

AVERAGE	AVERAGE
3	2.764

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.76							H 2.76
CO2	H 2.7		H 2.7	H 2.7			H 2.7	H 2.7
CO3	H 2.76			H 2.76			H 2.76	H 2.76
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		H 2.8	
AVERAGE OF COS FOR POS	2.764		2.766666667	2.765	2.8		2.753333333	2.755
AVERAGE OF POS	2.7648		2.766667	2.765	2.8		2.753333	2.75375
AVERAGE	2.767258333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: DATABASE MANAGEMENT SYSTEMS
COURSE CODE: CE18503 **CREDITS: 4**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Represent logical database using Entity Relationship and Enhanced ER model.	IV(ANALYZE)
CO2	CO2: Formulate database using relational algebra and organize relation using normalization.	V(EVALUATE)
CO3	CO3: Design SQL queries and implements PL/SQL.	II(UNDERSTAND)
CO4	CO4: Classify the storage and file structure, storage access, indexing and hashing techniques of the database.	IV(ANALYZE))
CO5	CO5: Explain the concept of Transactions, recovery system and concurrency control	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

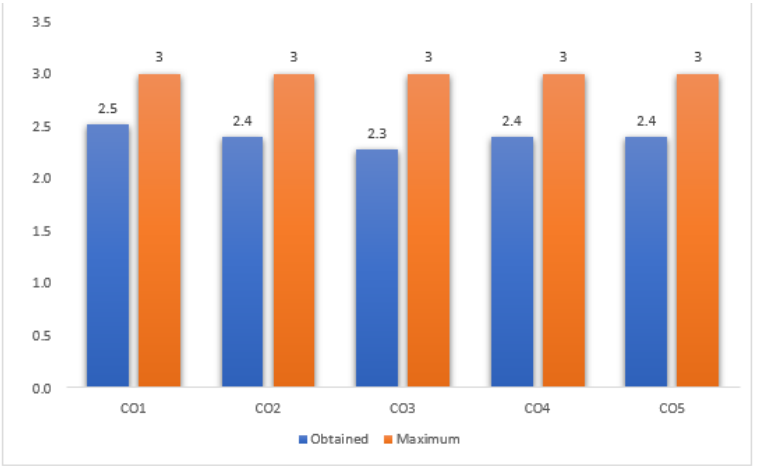
Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	H	H	H			S	H	H	H	H	H	
2	H	S	H	H	H		H	H	H	H	H	H	
3	H	S	S	H	S	S	H	H	H	H	H	H	
4	H	S	H	H	S	S	H	H	H	H	H	H	
5	H	S	H	H	S	S	H	S	H	H	S	S	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	2.0	0.0	1.8	100.0	3.0	3.0	2.5
CO2	0.0	0.0			100.0	3.0			100.0	3.0	2.0	0.0	1.5	100.0	3.0	3.0	2.4
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	2.0	0.0	1.2	100.0	3.0	3.0	2.3
CO4			0.0	0.0	100.0	3.0			100.0	3.0	2.0	0.0	1.5	100.0	3.0	3.0	2.4
CO5			0.0	0.0	100.0	3.0			100.0	3.0	2.0	0.0	1.5	100.0	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.4

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.52		H 2.52					
CO2	H 2.4		H 2.4	H 2.4			H 2.4	
CO3	H 2.28		H 2.28	H 2.28	H 2.28		H 2.28	
CO4	H 2.4		H 2.4	H 2.4			H 2.4	
CO5	H 2.4		H 2.4	H 2.4				H 2.4
AVERAGE OF COS FOR POS	2.4		2.4	2.37	2.28		2.36	2.4
AVERAGE OF POS	2.376		2.376	2.37	2.28		2.36	2.4
AVERAGE	2.360333333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: LINUX ADMINISTRATION

COURSE CODE: CE21504

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Describe Installation of Linux and User, Group Administration, ACL	VI(CREATE)
CO2	CO2: Explain the configuration NFS, FTP and Send mail server	VI(CREATE)
CO3	CO3: Explain configuration DHCP and SElinux	VI(CREATE)
CO4	CO4: Explain configuration SAMBA and DNS server	VI(CREATE)
CO5	CO5: Explain the configuration Apache server, disk quotas	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

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

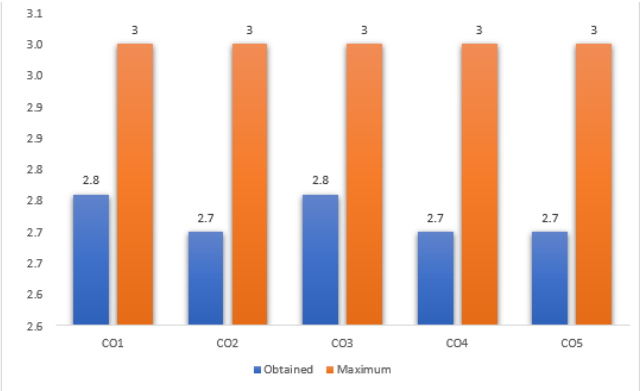
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**		**H**	**H**	**H**		**H**	**S**	**H**	**H**		**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	6.3	0.0	2.4	97.9	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	6.3	0.0	2.3	97.9	3.0	3.0	2.7
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	6.3	0.0	2.4	97.9	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	6.3	0.0	2.3	97.9	3.0	3.0	2.7
CO5			100.0	3.0	100.0	3.0			100.0	3.0	6.3	0.0	2.3	97.9	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.76		H 2.76					
CO2	H 2.7		H 2.7	H 2.7			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	H 2.7			H 2.7	
CO5	H 2.7		H 2.7	H 2.7				H 2.7
AVERAGE OF COS FOR POS	2.724		2.724	2.715	2.76		2.72	2.7
AVERAGE OF POS	2.7168		2.7168	2.715	2.76		2.72	2.7
AVERAGE	2.721433333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: SOFTWARE ENGINEERING **COURSE CODE: CE21505** **CREDITS: 3**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY
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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Design software through various process models.	I (REMEMBER)
CO2	CO2: Analyze Object Oriented concepts and various Models.	II(UNDERSTAND)
CO3	CO3: Choose different designs and architectures.	II(UNDERSTAND)
CO4	CO4: Explain components, golden rules and design evaluation.	VI(CREATE)
CO5	CO5: Select testing techniques and determine its quality.	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

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

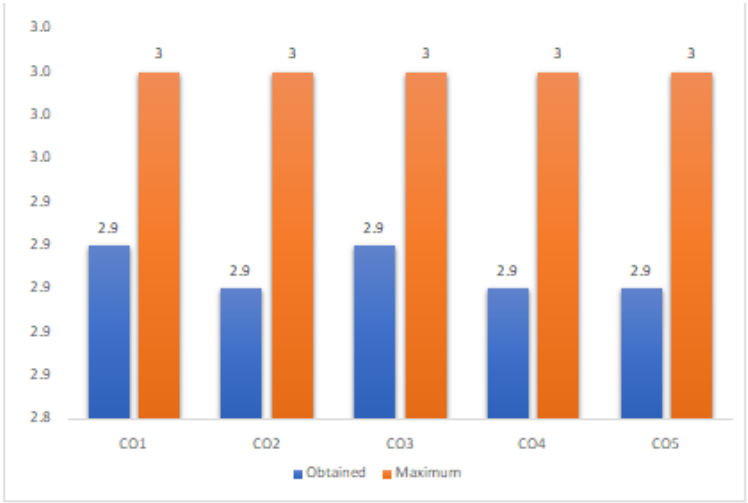
H: Highly Supportive **S: Supportive**

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	98.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	78.0	2.0	2.8	96.0	3.0	3.0	2.9
CO2	98.0	3.0			100.0	3.0			100.0	3.0	78.0	2.0	2.8	96.0	3.0	3.0	2.9
CO3	98.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	78.0	2.0	2.8	96.0	3.0	3.0	2.9
CO4			100.0	3.0	100.0	3.0			100.0	3.0	78.0	2.0	2.8	96.0	3.0	3.0	2.9
CO5			100.0	3.0	100.0	3.0			100.0	3.0	78.0	2.0	2.8	96.0	3.0	3.0	2.9

AVERAGE	AVERAGE
3	2.908

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.92			H 2.92			H 2.92	
CO2	H 2.9		H 2.9	H 2.9			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	
CO5	H 2.9		H 2.9	H 2.9				H 2.9
AVERAGE OF COS FOR POS	2.908		2.905	2.908	2.92		2.91	2.9
AVERAGE OF POS	2.9056		2.905	2.9056	2.92		2.9075	2.9
AVERAGE	2.907283333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: COMPUTER NETWORKS

CODE: BS18545

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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 real world problems.
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data

using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Identify basic computer network topologies and protocols and explain Data Communication System components	II (UNDERSTAND)
CO2	CO2: Classify different error detecting techniques.	IV(ANALYZE)
CO3	CO3: Construct sub-netting and routing mechanisms.	III (APPLY)
CO4	CO4: Sketch the routing protocols and analyze how to assign the IP addresses for the given network	V(EVALUATE)
CO5	CO5: Develop network design and implementation	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

Course	**Programme Outcomes**	**Program Specific outcomes**

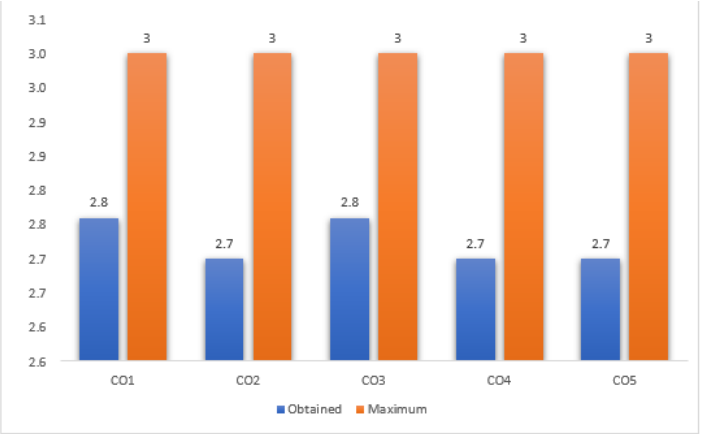
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
2	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
3	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
4	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
5	**S**	**H**	**H**		**S**		**S**	**S**	**S**				

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	95.8	3.0			100.0	3.0	100.0	3.0	100.0	3.0	4.2	0.0	2.4	95.8	3.0	3.0	2.8
CO2	95.8	3.0			100.0	3.0			100.0	3.0	4.2	0.0	2.3	95.8	3.0	3.0	2.7
CO3	95.8	3.0	100.0	3.0	100.0	3.0			100.0	3.0	4.2	0.0	2.4	95.8	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	4.2	0.0	2.3	95.8	3.0	3.0	2.7
CO5			100.0	3.0	100.0	3.0			100.0	3.0	4.2	0.0	2.3	95.8	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.76		H 2.76					
CO2	H 2.7		H 2.7	H 2.7			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	H 2.7			H 2.7	
CO5	H 2.7		H 2.7	H 2.7				H 2.7
AVERAGE OF COS FOR POS	2.724		2.724	2.715	2.76		2.72	2.7
AVERAGE OF POS	2.7168		2.7168	2.715	2.76		2.72	2.7
AVERAGE	2.721433333							

SECOND SEMESTER-WISE DISTRIBUTION OF SUBJECTS

DEPARTMENT OF COMPUTER SCIENCE

B.SC(COMPUTER SCIENCE AND INFORMATION TECHNOLOGY)

Subject code	Title of the subject
BS19221	ENGINEERING PHYSICS
BS18201	MATHEMATICS-II
CSIT19201	LOGIC AND DIGITAL CIRCUITS
BS22202	C++ AND DATA STRUCTURES

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ENGINEERING PHYSICS

COURSE CODE: BS19221

CREDITS: 4

DEPARTMENT: B.Sc. (COMPUTER SCIENCE AND INFORMATION TECHNOLOGY)

PROGRAMME OUTCOMES – (B. SC.)

PROGRAM OBJECTIVES (POs)

- **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 OUTCOME(DEPARTMENTAL):

STUDENTS WILL BE ABLE TO:

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems**.**

- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1	**CO1: Apply** Fundamental electromagnetic concepts for various applications including wireless and optical communications**.**	II (UNDERSTAND)
CO2	**CO2: Design** different applications of lasers and fibre optics in the field of industry, medical and telecommunications	III (APPLY)

CO3	**CO3: Distinguish** the various crystalline materials and to understand the crystallographic techniques	V (EVALUATE)
CO4	**CO4: Apply** concepts of wave and particle nature of material particles for various engineering applications.	II (UNDERSTAND)
CO5	**CO5: Develop** different devices with more efficiency using superconducting and nano materials.	III (APPLY)

Table 1: CO, PO, PSO MAPPING

Course	**Programme Outcomes**	**Program Specific outcomes**

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

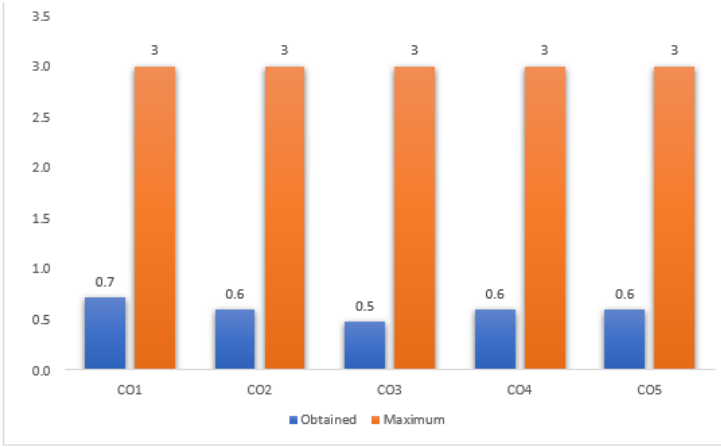
H: Highly Supportive **S: Supportive**

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	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	0.0	0.0	1.8	39.2	0.0	0.0	0.7
CO2	0.0	0.0			100.0	3.0			100.0	3.0	0.0	0.0	1.5	39.2	0.0	0.0	0.6
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	0.0	0.0	1.2	39.2	0.0	0.0	0.5
CO4			0.0	0.0	100.0	3.0			100.0	3.0	0.0	0.0	1.5	39.2	0.0	0.0	0.6
CO5			0.0	0.0	100.0	3.0			100.0	3.0	0.0	0.0	1.5	39.2	0.0	0.0	0.6

AVERAGE	AVERAGE
0	0.6

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 0.72		H 0.72	H 0.72	H 0.72	H 0.72	H 0.72	H 0.72
CO2	H 0.6	H 0.6		H 0.6			H 0.6	
CO3	H 0.48	H 0.48	H 0.48	H 0.48		H 0.48		H 0.48
CO4	H 0.6	H 0.6	H 0.6	H 0.6	H 0.6			H 0.6
CO5	H 0.6	H 0.6	H 0.6	H 0.6			H 0.6	
AVERAGE OF COS FOR POS	0.6	0.57	0.6	0.6	0.66	0.6	0.64	0.6
AVERAGE OF POS	0.576	0.57	0.57	0.576	0.63	0.54	0.61333	0.56
AVERAGE	0.579416667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: MATHEMATICS-II

COURSE CODE: BS18201

CREDITS: 4

DEPARTMENT: B.Sc. (COMPUTER SCIENCE AND INFORMATION TECHNOLOGY)

PROGRAMME OUTCOMES – (B. SC.)

PROGRAM OBJECTIVES (POs)

- **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**.**
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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 OUTCOME(DEPARTMENTAL):

STUDENTS WILL BE ABLE TO:

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems**.**
- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1	**CO1: Categorize the vector-valued functions of a real variable and their curves, Gradient vector fields and constructing potentials.**	II (UNDERSTAND)

CO2	**CO2: Analyze the differential ideas of divergence, curl, and the Laplacian along with their physical interpretations**	III (APPLY)
CO3	**CO3: Use the applications of Green's theorem in the plane, Gauss divergence theorem and Stake's theorem.**	V (EVALUATE)
CO4	**CO4: Formulate the solution set of a system of linear equations**	II (UNDERSTAND)
CO5	**CO5: Solve the characteristic polynomial, eigenvectors, and eigenvalues.**	III (APPLY)

Table 1: CO, PO, PSO MAPPING

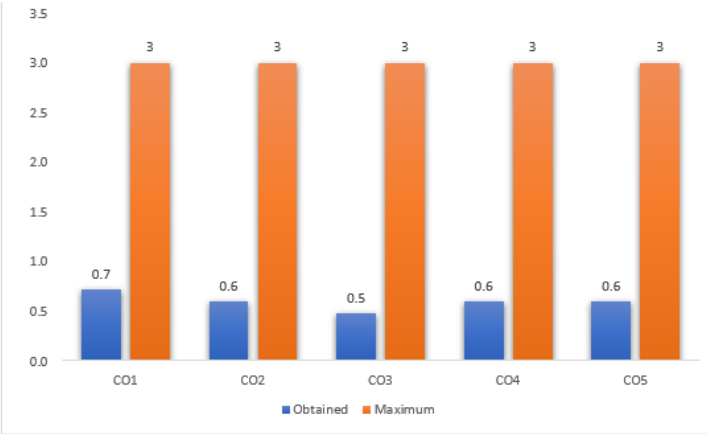
Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H	S	H	H	S	H	S	H	H	S	S	S	
2	H	H	S	H	H	H	S	S	H	S	S	S	
3	H	H	H	H	H	S	H	H	H	H	H	H	
4	H	H	H	H	H	S	H	S	H	H	H	S	
5	H	H	H	H	S	H	S	H	S	H	H	H	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	2.0	0.0	1.8	31.4	0.0	0.0	0.7
CO2	0.0	0.0			100.0	3.0			100.0	3.0	2.0	0.0	1.5	31.4	0.0	0.0	0.6
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	2.0	0.0	1.2	31.4	0.0	0.0	0.5
CO4			0.0	0.0	100.0	3.0			100.0	3.0	2.0	0.0	1.5	31.4	0.0	0.0	0.6
CO5			0.0	0.0	100.0	3.0			100.0	3.0	2.0	0.0	1.5	31.4	0.0	0.0	0.6

AVERAGE	AVERAGE
0	0.6

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 0.72		H 0.72	H 0.72	H 0.72	H 0.72	H 0.72	H 0.72
CO2	H 0.6	H 0.6		H 0.6			H 0.6	
CO3	H 0.48	H 0.48	H 0.48	H 0.48		H 0.48		H 0.48
CO4	H 0.6	H 0.6	H 0.6	H 0.6	H 0.6			H 0.6
CO5	H 0.6	H 0.6	H 0.6	H 0.6			H 0.6	
AVERAGE OF COS FOR POS	0.6	0.57	0.6	0.6	0.66	0.6	0.64	0.6
AVERAGE OF POS	0.576	0.57	0.57	0.576	0.63	0.54	0.61333	0.56
AVERAGE								

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: LOGIC AND DIGITAL CIRCUITS

COURSE CODE: CSIT19201

CREDITS: 4

DEPARTMENT: B.Sc. (COMPUTER SCIENCE AND INFORMATION TECHNOLOGY)

PROGRAMME OUTCOMES – (B. SC.)

PROGRAM OBJECTIVES (POs)

- **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 OUTCOME(DEPARTMENTAL):

STUDENTS WILL BE ABLE TO:

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems**.**

- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1	**CO1: Explain the binary logic and switching circuits**	II (UNDERSTAND)
CO2	**CO2: Solve Boolean algebra and Boolean functions.**	III (APPLY)

CO3	**CO3: Design Boolean functions using universal gates**	V (EVALUATE)
CO4	**CO4: Construct the arithmetic circuits and digital comparators**	II (UNDERSTAND)
CO5	**CO5: Construct and analyze the various combinational circuits**	III (APPLY)

Table 1: CO, PO, PSO MAPPING

Course	**Programme Outcomes**	**Program Specific outcomes**

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

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

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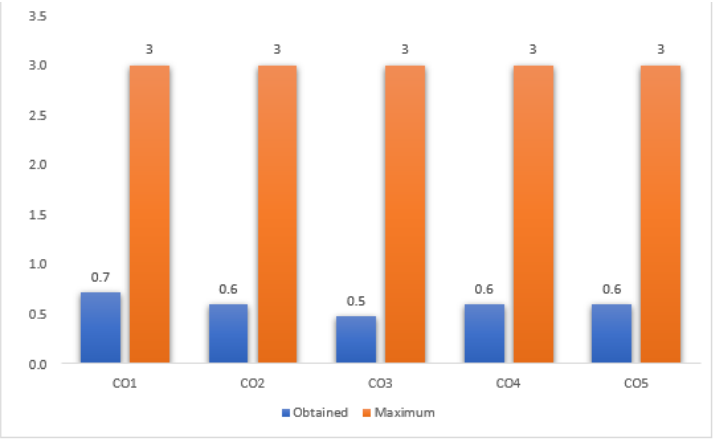

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	0.0	0.0			100.0	3.0	100.0	3.0	100.0	3.0	3.9	0.0	1.8	13.7	0.0	0.0	0.7
CO2	0.0	0.0			100.0	3.0			100.0	3.0	3.9	0.0	1.5	13.7	0.0	0.0	0.6
CO3	0.0	0.0	0.0	0.0	100.0	3.0			100.0	3.0	3.9	0.0	1.2	13.7	0.0	0.0	0.5
CO4			0.0	0.0	100.0	3.0			100.0	3.0	3.9	0.0	1.5	13.7	0.0	0.0	0.6
CO5			0.0	0.0	100.0	3.0			100.0	3.0	3.9	0.0	1.5	13.7	0.0	0.0	0.6

AVERAGE	AVERAGE
0	0.6

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:

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OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 0.72		H 0.72	H 0.72	H 0.72	H 0.72	H 0.72	H 0.72
CO2	H 0.6	H 0.6		H 0.6			H 0.6	
CO3	H 0.48	H 0.48	H 0.48	H 0.48		H 0.48		H 0.48
CO4	H 0.6	H 0.6	H 0.6	H 0.6	H 0.6			H 0.6
CO5	H 0.6	H 0.6	H 0.6	H 0.6			H 0.6	
AVERAGE OF COS FOR POS	0.6	0.57	0.6	0.6	0.66	0.6	0.64	0.6
AVERAGE OF POS	0.576	0.57	0.57	0.576	0.63	0.54	0.61333	0.56
AVERAGE	0.579416667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: C++ and Data Structures

COURSE CODE: BS22202

CREDITS: 4

DEPARTMENT: B.Sc. (COMPUTER SCIENCE AND INFORMATION TECHNOLOGY)

PROGRAMME OUTCOMES – (B. SC.)

PROGRAM OBJECTIVES (POs)

- **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 OUTCOME(DEPARTMENTAL):

STUDENTS WILL BE ABLE TO:

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to real world problems**.**

- **PSO2:** Understand the fundamentals of Computer Organisation, 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. Analyse and interpret the data using an ethically responsible approach and derive insights from it.

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1	**CO1: Differentiate** between object-oriented programming and procedure-oriented programming.	II (UNDERSTAND)
CO2	**CO2: Develop** programs using object oriented programming features**.**	III (APPLY)

CO3	**CO3: Organize** the data using sorting and various linear data structures and determine the time complexity	V (EVALUATE)
CO4	**CO4: Illustrate** non-linear data structures like trees, graph	II (UNDERSTAND)
CO5	**CO5: Choose** appropriate data structures to represent data items in real world problems	III (APPLY)

Table 1: CO, PO, PSO MAPPING

Course	**Programme Outcomes**	**Program Specific outcomes**

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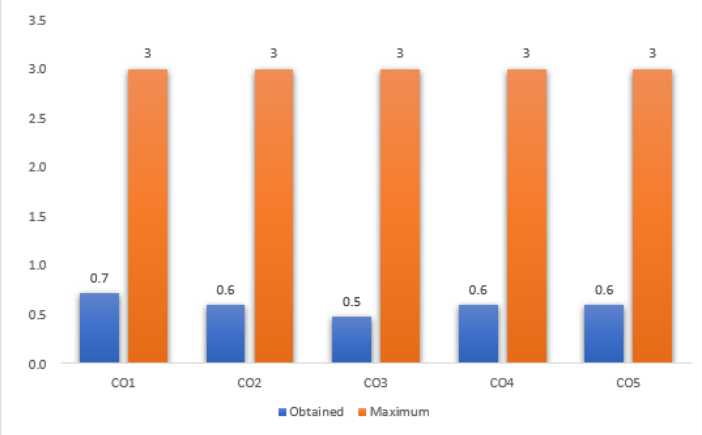

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
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CO5			0.0	0.0	100.0	3.0			100.0	3.0	3.9	0.0	1.5	19.6	0.0	0.0	0.6

AVERAGE	AVERAGE
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CO3	H 0.48	H 0.48	H 0.48	H 0.48		H 0.48		H 0.48
CO4	H 0.6	H 0.6	H 0.6	H 0.6	H 0.6			H 0.6
CO5	H 0.6	H 0.6	H 0.6	H 0.6			H 0.6	
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