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**	

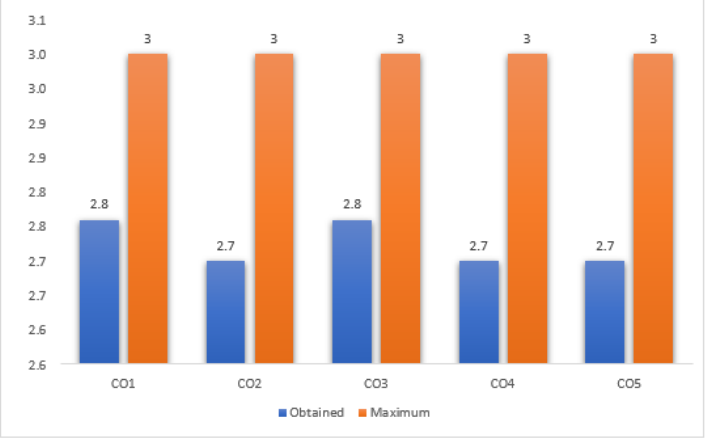
1	**H**		**H**	**H**			**S**	**H**		**H**		**H**	
2	**S**		**S**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	
4	**S**		**S**	**H**	**H**		**S**	**H**		**H**		**H**	
5	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	

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	98.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	6.1	0.0	2.4	93.9	3.0	3.0	2.8
CO2	98.0	3.0			100.0	3.0			100.0	3.0	6.1	0.0	2.3	93.9	3.0	3.0	2.7
CO3	98.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	6.1	0.0	2.4	93.9	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	6.1	0.0	2.3	93.9	3.0	3.0	2.7
CO5			100.0	3.0	100.0	3.0			100.0	3.0	6.1	0.0	2.3	93.9	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: 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.

- **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.

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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: 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**	

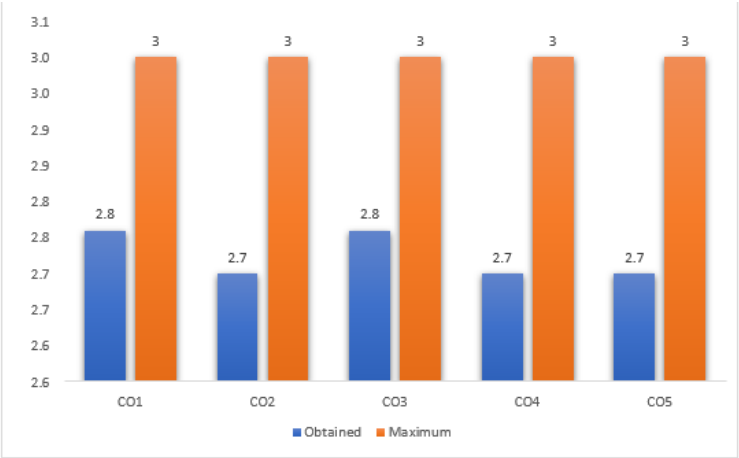
1	**H**		**H**	**S**			**S**	**S**		**S**		**H**	
2	**H**		**H**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**H**		**H**	**S**		**H**		**H**	
4	**S**		**H**	**H**	**S**		**S**	**S**		**H**		**S**	
5	**H**		**H**	**H**	**S**		**S**	**H**		**H**		**H**	

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:

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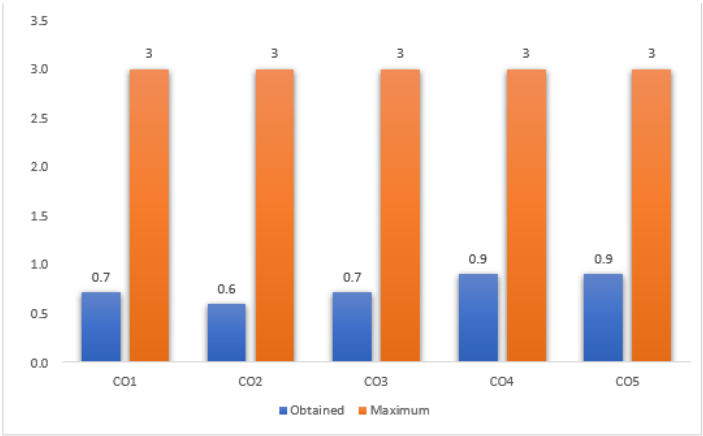

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	44.9	0.0			100.0	3.0	100.0	3.0	100.0	3.0	10.2	0.0	1.8	18.4	0.0	0.0	0.7
CO2	44.9	0.0			100.0	3.0			100.0	3.0	10.2	0.0	1.5	18.4	0.0	0.0	0.6
CO3	44.9	0.0	98.0	3.0	100.0	3.0			100.0	3.0	10.2	0.0	1.8	18.4	0.0	0.0	0.7
CO4			98.0	3.0	100.0	3.0			100.0	3.0	10.2	0.0	2.3	18.4	0.0	0.0	0.9
CO5			98.0	3.0	100.0	3.0			100.0	3.0	10.2	0.0	2.3	18.4	0.0	0.0	0.9

AVERAGE	AVERAGE
0	0.768

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 0.72		H 0.72	H 0.72	H 0.72		H 0.72	
CO4	H 0.9		H 0.9	H 0.9			H 0.9	
CO5	H 0.9		H 0.9	H 0.9				H 0.9
AVERAGE OF COS FOR POS	0.768		0.768	0.78	0.72		0.74	0.9
AVERAGE OF POS	0.7776		0.7776	0.78	0.72		0.74	0.9
AVERAGE	0.782533333							

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.
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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

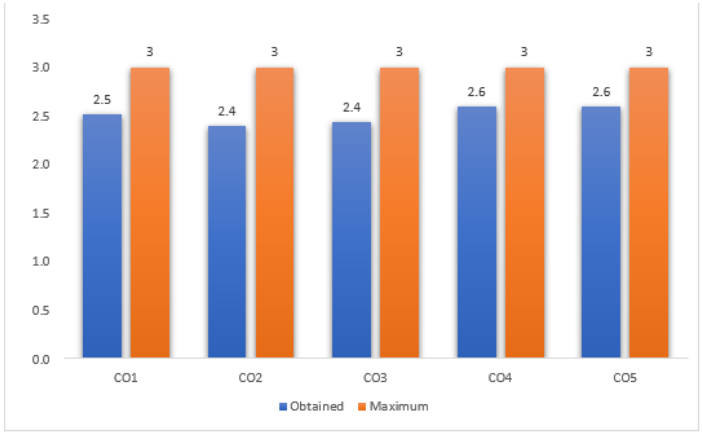
Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	H	H	H			S	H	H	H	H	H	
2	H	S	H	H	H		H	H	H	H	H	H	
3	H	S	S	H	S	S	H	H	H	H	H	H	
4	H	S	H	H	S	S	H	H	H	H	H	H	
5	H	S	H	H	S	S	H	S	H	H	S	S	

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

considerations.

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

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:

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

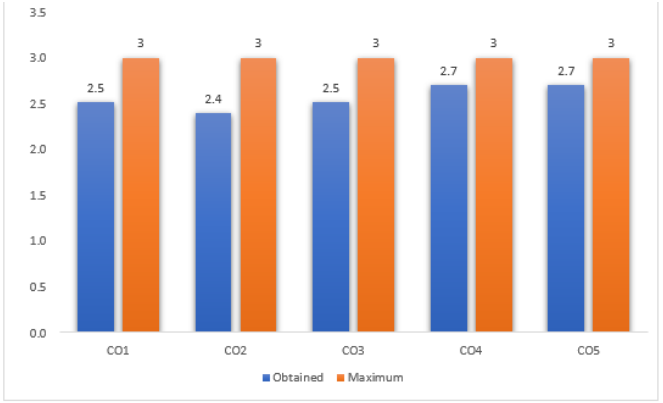
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**		**H**	**H**	**H**		**H**	**S**	**H**	**H**		**H**	

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	59.2	0.0			100.0	3.0	100.0	3.0	100.0	3.0	10.2	0.0	1.8	85.7	3.0	3.0	2.5
CO2	59.2	0.0			100.0	3.0			100.0	3.0	10.2	0.0	1.5	85.7	3.0	3.0	2.4
CO3	59.2	0.0	87.8	3.0	100.0	3.0			100.0	3.0	10.2	0.0	1.8	85.7	3.0	3.0	2.5
CO4			87.8	3.0	100.0	3.0			100.0	3.0	10.2	0.0	2.3	85.7	3.0	3.0	2.7
CO5			87.8	3.0	100.0	3.0			100.0	3.0	10.2	0.0	2.3	85.7	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.568

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 2.52		H 2.52	H 2.52	H 2.52		H 2.52	
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	2.568		2.568	2.58	2.52		2.54	2.7
AVERAGE OF POS	2.5776		2.5776	2.58	2.52		2.54	2.7
AVERAGE	2.582533333							

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

Subject code	Title of the subject
EN23101	GENERALENGLISH II
VE18101	INDIAN HERITAGE AND CULTURE
BS19101	MATHEMATICS II
BS18129	ENGINEERING PHYSICS
CSIT18101	LOGIC AND DIGITAL CIRCUITS
BS19123	C++ AND DATA STRUCTURES

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE:GENERAL ENGLISH -II **COURSE CODE: EN23201** **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	To identify a sound understanding on the formation of words and to demonstrate the functional grammatical component in the sentence.	I (REMEMBER)
CO2	To paraphrase ideas and thoughts in a coherent, neat and organized manner in order to utilize the writing skills for sound writing propagandas.	II(UNDERSTAND)
CO3	To create an understanding on Indian Literature, alongside to develop and chisel their communication skills.	II(UNDERSTAND)
CO4	To recognize the moral element which underlies in the short story; an exposure to informal language.	VI(CREATE)
CO5	To develop listening and speaking skills through effective sentence constructions and efficient delivery.	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			

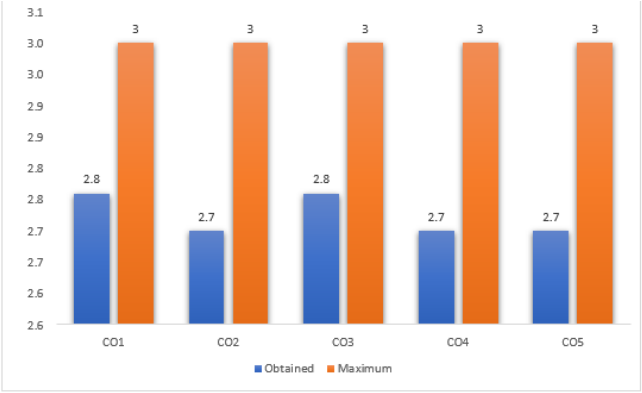
H: Highly Supportive **S: Supportive**

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	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: INDIAN HERITAGE AND CULTURE

COURSE CODE: IC23201

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.
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PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:

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- **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 better about the origin of ancient indiam culture and the contributions of great rulers from both north and south india for indian culture in ancient days	II (UNDERSTAND)
CO2	**CO2:** Analyse how Persian culture entered into India and it influence the fine arts of Indian society like classical music dance and architecture	IV(ANALYZE)
CO3	**CO3** Assess how the Indian orthodox society turn into modern and western society in the 19th century. It also edifies the students with spiritual doctrines of various religions	III (APPLY)
CO4	CO4: Evaluate various challenges face by the youth and the evils effects of terrorism on society	V(EVALUATE)
CO5	CO5: Create belonging among the students by bringing awareness of the rights and duties to make the world a better place and it throw light on gender sensitization issues of women children and LGBT	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:

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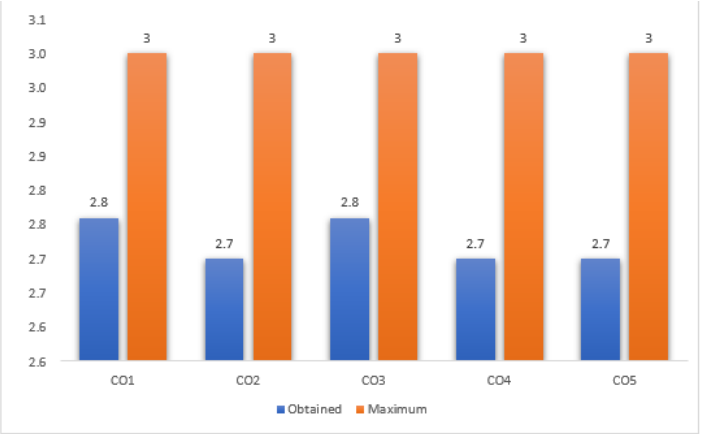
Pass percent of less than 65%= 0



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	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							

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.)

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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- **PO5. Environment and sustainability:** Understand the impact of professional science and technological solutions in societal and

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- **PO6.Individual and team work:** Function objectively as an individual and as a member in diverse teams.
- **PO7. Communication:** Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.
- **PO8. Life-long learning:** Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to 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	I(REMEMBER)

CO2	CO2: **Classify** different error detecting techniques.	IV(ANALYZE)
CO3	CO3: C**onstruct** subnetting and routing mechanisms.	III (APPLY)
CO4	CO4: **Sketch** the routing protocols and analyse how to assign the IP addresses for the given network	IV(ANALYZE)
CO5	CO5: **Develop** network design and implementation	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**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**S**	**H**	**H**	
2	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	
3	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	

4	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**S**	
5	**H**	**H**	**H**	**H**	**H**	**S**	**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
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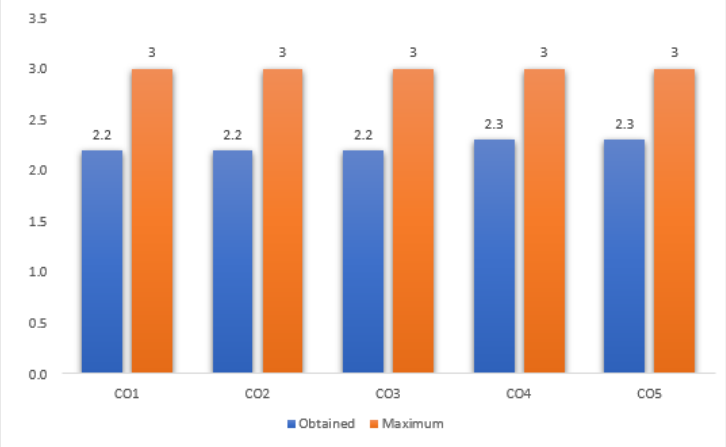

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	64.6	0.0			93.8	3.0	72.9	1.0	66.7	1.0	2.1	0.0	1.0	89.6	3.0	3.0	2.2
CO2	64.6	0.0			93.8	3.0			66.7	1.0	2.1	0.0	1.0	89.6	3.0	3.0	2.2
CO3	64.6	0.0	66.7	1.0	93.8	3.0			66.7	1.0	2.1	0.0	1.0	89.6	3.0	3.0	2.2
CO4			66.7	1.0	93.8	3.0			66.7	1.0	2.1	0.0	1.3	89.6	3.0	3.0	2.3
CO5			66.7	1.0	93.8	3.0			66.7	1.0	2.1	0.0	1.3	89.6	3.0	3.0	2.3

AVERAGE	AVERAGE
3	2.24

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.2		H 2.2					
CO2	H 2.2		H 2.2	H 2.2			H 2.2	
CO3	H 2.2		H 2.2	H 2.2	H 2.2		H 2.2	
CO4	H 2.3		H 2.3	H 2.3			H 2.3	
CO5	H 2.3		H 2.3	H 2.3				H 2.3
AVERAGE OF COS FOR POS	2.24		2.24	2.25	2.2		2.233333333	2.3
AVERAGE OF POS	2.248		2.248	2.25	2.2		2.23333	2.3
AVERAGE	2.246555556							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: LOGICAL AND DIGITAL CIRCUITS

COURSE CODE: CSIT19201

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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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.
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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: Solve** challenging problems in Number Theory.	III (APPLY)
CO2	**CO2**: **Demonstrate** knowledge and understanding of topics including divisibility, prime numbers, congruences, Diophantine equations.	IV(ANALYZE)
CO3	**CO3**: **Identify** methods and techniques used in number theory.	III (APPLY)
CO4	**CO4**: **Develop** a deeper conceptual understanding of the theoretical basis of number theory and cryptography.	VI(CREATE)
CO5	**CO5: Calculate** the Laplace transform, Inverse Laplace Transform of standard functions.	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**	**S**	**S**		**S**	**S**	**H**	**S**		**S**	

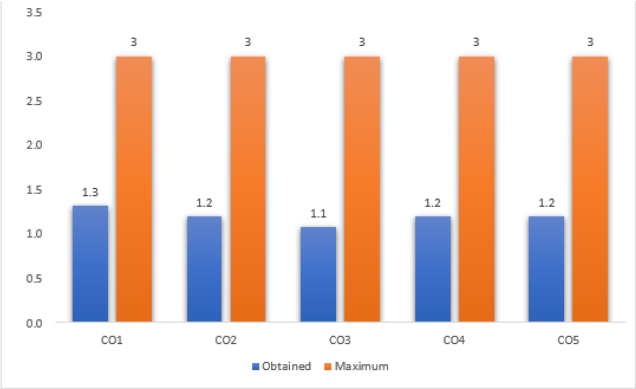
2	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**S**	
3	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**H**	
4	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**S**	
5	**H**	**S**	**H**	**H**	**S**		**S**	**H**	**H**	**H**		**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	20.8	0.0			100.0	3.0	100.0	3.0	100.0	3.0	6.3	0.0	1.8	68.8	1.0	1.0	1.3
CO2	20.8	0.0			100.0	3.0			100.0	3.0	6.3	0.0	1.5	68.8	1.0	1.0	1.2
CO3	20.8	0.0	39.6	0.0	100.0	3.0			100.0	3.0	6.3	0.0	1.2	68.8	1.0	1.0	1.1
CO4			39.6	0.0	100.0	3.0			100.0	3.0	6.3	0.0	1.5	68.8	1.0	1.0	1.2
CO5			39.6	0.0	100.0	3.0			100.0	3.0	6.3	0.0	1.5	68.8	1.0	1.0	1.2

AVERAGE	AVERAGE
1	1.2

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 1.32		H 1.32					
CO2	H 1.2		H 1.2	H 1.2			H 1.2	
CO3	H 1.08		H 1.08	H 1.08	H 1.08		H 1.08	
CO4	H 1.2		H 1.2	H 1.2			H 1.2	
CO5	H 1.2		H 1.2	H 1.2				H 1.2
AVERAGE OF COS FOR POS	1.2		1.2	1.17	1.08		1.16	1.2
AVERAGE OF POS	1.176		1.176	1.17	1.08		1.16	1.2
AVERAGE	1.160333333							

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.) **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**: **Explain** concepts of confidentiality, availability and integrity (CIA) in context of Information security	VI(CREATE)
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**: **Analyse** systems, tools, methods, and techniques for securing digital information within an organization	IV(ANALYZE)
CO5	**CO5**: **Develop** encryption and decryption techniques.	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	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
2	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
3	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
4	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
5	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

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Pass percent of 85% and above= 3
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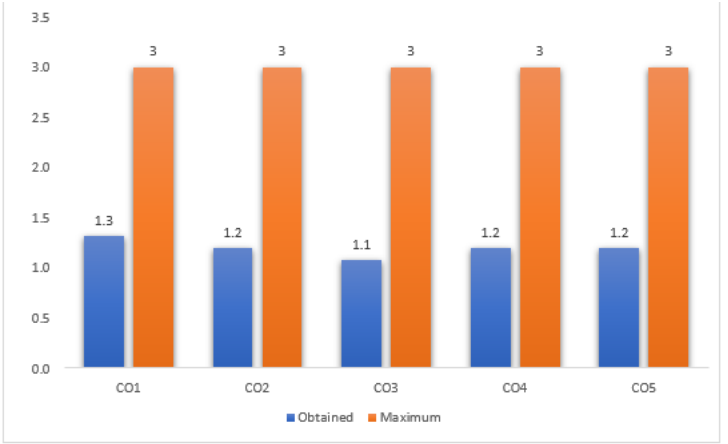

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	20.8	0.0			100.0	3.0	100.0	3.0	100.0	3.0	6.3	0.0	1.8	68.8	1.0	1.0	1.3
CO2	20.8	0.0			100.0	3.0			100.0	3.0	6.3	0.0	1.5	68.8	1.0	1.0	1.2
CO3	20.8	0.0	39.6	0.0	100.0	3.0			100.0	3.0	6.3	0.0	1.2	68.8	1.0	1.0	1.1
CO4			39.6	0.0	100.0	3.0			100.0	3.0	6.3	0.0	1.5	68.8	1.0	1.0	1.2
CO5			39.6	0.0	100.0	3.0			100.0	3.0	6.3	0.0	1.5	68.8	1.0	1.0	1.2

AVERAGE	AVERAGE
1	1.2

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 1.32		H 1.32					
CO2	H 1.2		H 1.2	H 1.2			H 1.2	
CO3	H 1.08		H 1.08	H 1.08	H 1.08		H 1.08	
CO4	H 1.2		H 1.2	H 1.2			H 1.2	
CO5	H 1.2		H 1.2	H 1.2				H 1.2
AVERAGE OF COS FOR POS	1.2		1.2	1.17	1.08		1.16	1.2
AVERAGE OF POS	1.176		1.176	1.17	1.08		1.16	1.2
AVERAGE	1.160333333							

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.)

B. Sc.:

- **PO1. Scientific Knowledge**: Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems.

- **PO2. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:

- **PSO1:** Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to 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.	IV(ANALYZE)
CO2	**CO2: Develop** programs using object oriented programming features.	VI(CREATE)
CO3	**CO3: Organise** the data using sorting and various linear data structures and determine the time complexity	VI(CREATE)
CO4	**CO4: Illustrate** non-linear data structures like trees, graph	IV(ANALYZE)
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**			**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

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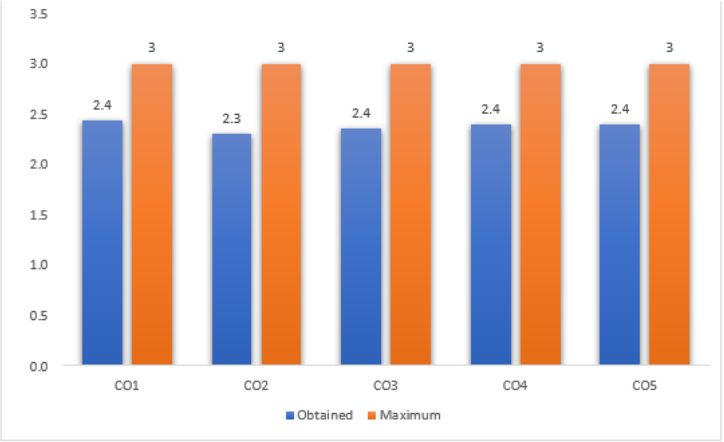

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	72.9	1.0			100.0	3.0	100.0	3.0	72.9	1.0	6.3	0.0	1.6	91.7	3.0	3.0	2.4
CO2	72.9	1.0			100.0	3.0			72.9	1.0	6.3	0.0	1.3	91.7	3.0	3.0	2.3
CO3	72.9	1.0	77.1	2.0	100.0	3.0			72.9	1.0	6.3	0.0	1.4	91.7	3.0	3.0	2.4
CO4			77.1	2.0	100.0	3.0			72.9	1.0	6.3	0.0	1.5	91.7	3.0	3.0	2.4
CO5			77.1	2.0	100.0	3.0			72.9	1.0	6.3	0.0	1.5	91.7	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.38

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.44		H 2.44					
CO2	H 2.3		H 2.3	H 2.3			H 2.3	
CO3	H 2.36		H 2.36	H 2.36	H 2.36		H 2.36	
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	2.38		2.38	2.365	2.36		2.353333333	2.4
AVERAGE OF POS	2.368		2.368	2.365	2.36		2.35333	2.4
AVERAGE	2.369055556							

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

Subject Code	Title of the Subject
ES18101	Environmental Studies and Gender Sensitization (AECC-5)
G20CE1T	PC Hardware, and Software Installation (GE-2)(ID)
CE20301	IT Hardware and Networking (SEC-2)
BS18335	Discrete Mathematics (Core-7)
CE20302	Electrical Circuits and Machines (Core-8)
BS18336	Java Programming (Core-9)

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.
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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: 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

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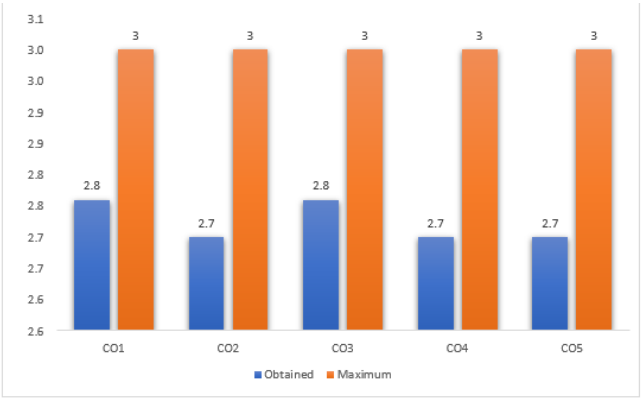

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	95.8	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: PC HARDWARE AND SOFTWARE INSTALLATION

COURSE CODE: G20CE1T

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.
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	COURSE OUTCOMES	BLOOM'S TAXONOMY LEVEL
CO1	CO1: Identify the basic components of computers	III (APPLY)
CO2	CO2: Differentiate between internal and external connectors	IV(ANALYZE)
CO3	CO3: Identify and troubleshoot the power supply of computer	III (APPLY)
CO4	CO4: Choose RAM and Hard disk drives for a computer	VI(CREATE)
CO5	CO5: Develop skill to Assembly and Disassembly a system	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**	

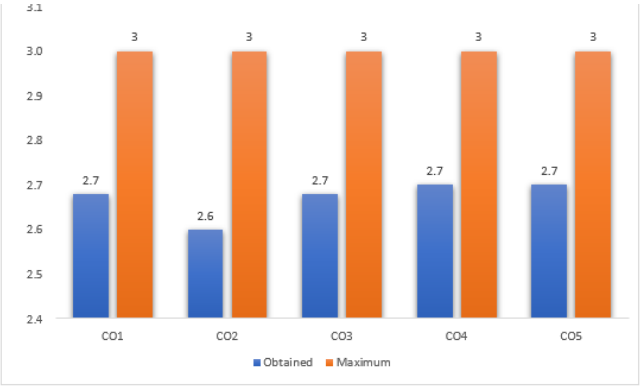
1	**H**		**H**	**S**			**S**	**S**		**S**		**H**	
2	**H**		**H**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**H**		**H**	**S**		**H**		**H**	
4	**S**		**H**	**H**	**S**		**S**	**S**		**H**		**S**	
5	**H**		**H**	**H**	**S**		**S**	**H**		**H**		**H**	

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	81.3	2.0			102.1	3.0	102.1	3.0	102.1	3.0	2.1	0.0	2.2	93.8	3.0	3.0	2.7
CO2	81.3	2.0			102.1	3.0			102.1	3.0	2.1	0.0	2.0	93.8	3.0	3.0	2.6
CO3	81.3	2.0	102.1	3.0	102.1	3.0			102.1	3.0	2.1	0.0	2.2	93.8	3.0	3.0	2.7
CO4			102.1	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			102.1	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	2.672

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.68		H 2.68					
CO2	H 2.6		H 2.6	H 2.6			H 2.6	
CO3	H 2.68		H 2.68	H 2.68	H 2.68		H 2.68	
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	2.672		2.672	2.67	2.68		2.66	2.7
AVERAGE OF POS	2.6704		2.6704	2.67	2.68		2.66	2.7
AVERAGE	2.675133333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: IT HARDWARE AND NETWORKING

COURSE CODE: CE20301

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.
- **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.

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 Motherboard and its components	III (APPLY)
CO2	. CO2: Explain the working of various storage devices	III (APPLY)
CO3	CO3: Analyze the working of Power supply devices	III (APPLY)
CO4	CO4: Identify different types of networking devices	V(EVALUATE)
CO5	CO5: Implement different types of Topologies	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**	

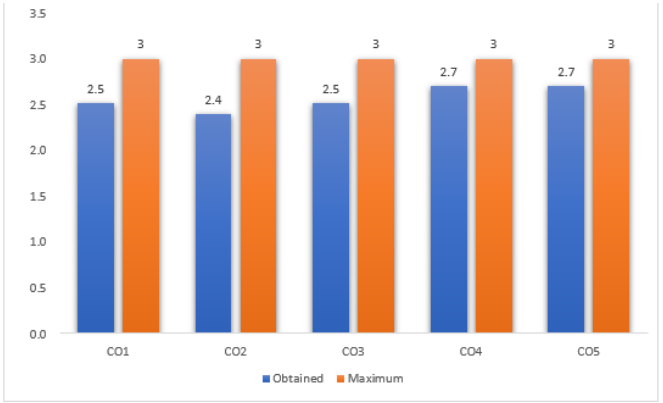
2	**S**	**S**	**S**	**S**	**S**		**S**	**S**	**H**	**H**	**S**	**H**	
3	**S**	**S**	**H**	**H**	**H**	**S**	**S**	**H**	**H**	**H**	**S**	**S**	
4	**H**	**H**	**H**	**H**	**S**			**S**	**H**	**H**	**S**	**S**	
5	**H**	**S**	**H**	**H**	**S**			**H**	**H**	**H**	**S**	**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
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	59.2	0.0			100.0	3.0	100.0	3.0	100.0	3.0	10.2	0.0	1.8	85.7	3.0	3.0	2.5
CO2	59.2	0.0			100.0	3.0			100.0	3.0	10.2	0.0	1.5	85.7	3.0	3.0	2.4
CO3	59.2	0.0	87.8	3.0	100.0	3.0			100.0	3.0	10.2	0.0	1.8	85.7	3.0	3.0	2.5
CO4			87.8	3.0	100.0	3.0			100.0	3.0	10.2	0.0	2.3	85.7	3.0	3.0	2.7
CO5			87.8	3.0	100.0	3.0			100.0	3.0	10.2	0.0	2.3	85.7	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.568

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 2.52		H 2.52	H 2.52	H 2.52		H 2.52	
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	2.568		2.568	2.58	2.52		2.54	2.7
AVERAGE OF POS	2.5776		2.5776	2.58	2.52		2.54	2.7
AVERAGE	2.582533333							

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

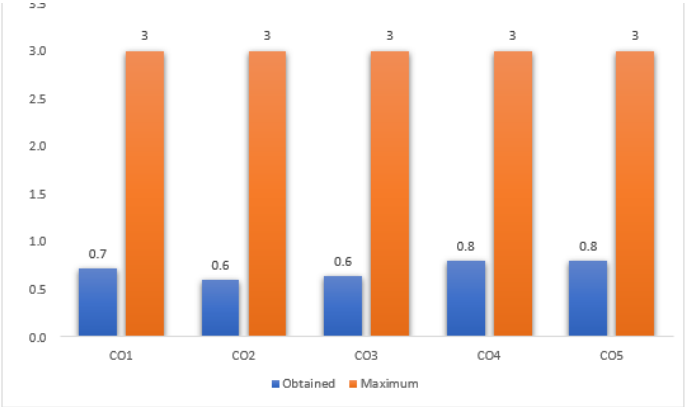
Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	H	H	H			S	H	H	H	H	H	
2	H	S	H	H	H		H	H	H	H	H	H	
3	H	S	S	H	S	S	H	H	H	H	H	H	
4	H	S	H	H	S	S	H	H	H	H	H	H	
5	H	S	H	H	S	S	H	S	H	H	S	S	

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	64.6	0.0			93.8	3.0	100.0	3.0	100.0	3.0	4.2	0.0	1.8	54.2	0.0	0.0	0.7
CO2	64.6	0.0			93.8	3.0			100.0	3.0	4.2	0.0	1.5	54.2	0.0	0.0	0.6
CO3	64.6	0.0	79.2	2.0	93.8	3.0			100.0	3.0	4.2	0.0	1.6	54.2	0.0	0.0	0.6
CO4			79.2	2.0	93.8	3.0			100.0	3.0	4.2	0.0	2.0	54.2	0.0	0.0	0.8
CO5			79.2	2.0	93.8	3.0			100.0	3.0	4.2	0.0	2.0	54.2	0.0	0.0	0.8

AVERAGE	AVERAGE
0	0.712

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 0.64		H 0.64	H 0.64	H 0.64		H 0.64	
CO4	H 0.8		H 0.8	H 0.8			H 0.8	
CO5	H 0.8		H 0.8	H 0.8				H 0.8
AVERAGE OF COS FOR POS	0.712		0.712	0.71	0.64		0.68	0.8
AVERAGE OF POS	0.7104		0.7104	0.71	0.64		0.68	0.8
AVERAGE	0.708466667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ELECTRICAL CIRCUITS AND MACHINES

COURSE CODE: CE20302

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: Analyze the electrical circuits with help of KCL and KVL techniques.	VI(CREATE)
CO2	CO2: Explain the operation of DC generator AND DC motor and analyze the characteristics of DC generator and DC Motor	VI(CREATE)
CO3	CO3: Analyze the starting and speed control methods of DC motors.	VI(CREATE)
CO4	CO4: Understand to develop equivalent circuit and evaluate performance of transformers	VI(CREATE)
CO5	CO5: Understand the operation of various special machines	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**	

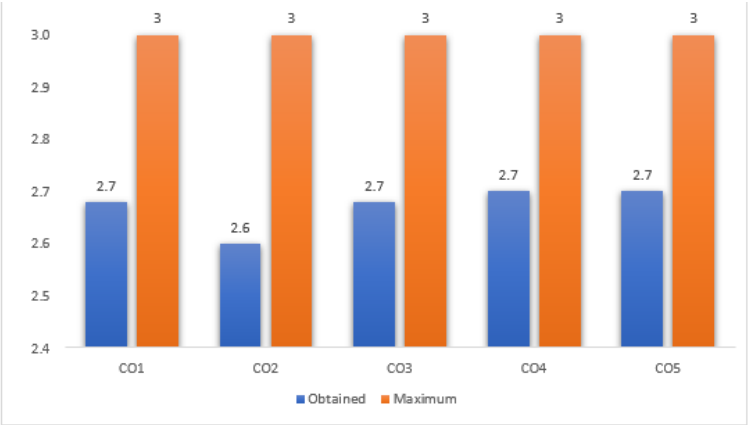
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**		**H**	**H**	**H**		**H**	**S**	**H**	**H**		**H**	

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	83.3	2.0			102.1	3.0	102.1	3.0	102.1	3.0	2.1	0.0	2.2	85.4	3.0	3.0	2.7
CO2	83.3	2.0			102.1	3.0			102.1	3.0	2.1	0.0	2.0	85.4	3.0	3.0	2.6
CO3	83.3	2.0	100.0	3.0	102.1	3.0			102.1	3.0	2.1	0.0	2.2	85.4	3.0	3.0	2.7
CO4			100.0	3.0	102.1	3.0			102.1	3.0	2.1	0.0	2.3	85.4	3.0	3.0	2.7
CO5			100.0	3.0	102.1	3.0			102.1	3.0	2.1	0.0	2.3	85.4	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.672

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.68		H 2.68					
CO2	H 2.6		H 2.6	H 2.6			H 2.6	
CO3	H 2.68		H 2.68	H 2.68	H 2.68		H 2.68	
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	2.672		2.672	2.67	2.68		2.66	2.7
AVERAGE OF POS	2.6704		2.6704	2.67	2.68		2.66	2.7
AVERAGE	2.675133333							

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			

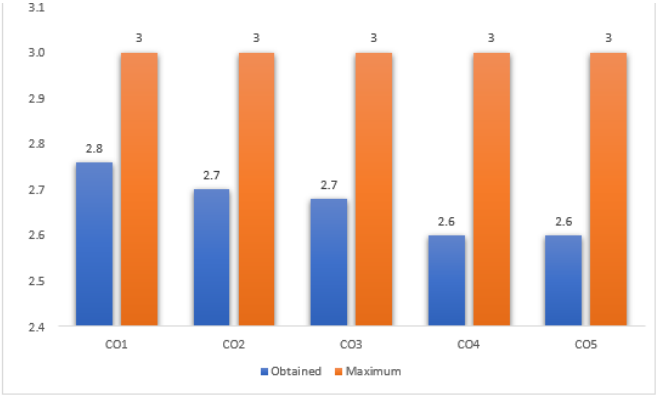
H: Highly Supportive **S: Supportive**

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							

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

Subject Code	Title of the Subject
CE18401	Probability and Statistics (GE-3) (DS)
CE20402	Server Administration (SEC-3)
CE20403	Computer Organization (Core-10)
BS18430	Operating Systems (Core-11)
BS20404	Micro Processors & Micro Controllers (Core-12)
CE20405	Python Programming (Core-13)

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PROBABILITY & STATISTICS

COURSE CODE: CE18401

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: Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient	II (UNDERSTAND)
CO2	CO2: Use discrete and continuous probability distributions, including requirements, mean and variance, and making decisions	IV(ANALYZE)
CO3	CO3: Analyze hypotheses tests of means, proportions and variances using both one-and twosample data sets.	III (APPLY)
CO4	CO4: Apply the appropriate Chi-Squared test for independence and goodness of fit. can differentiate between the test statistics to be used for dependent and independent samples	V(EVALUATE)
CO5	CO5: Understand the concepts of quality control, chance and assignable causes of variation, control charts for variables	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

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

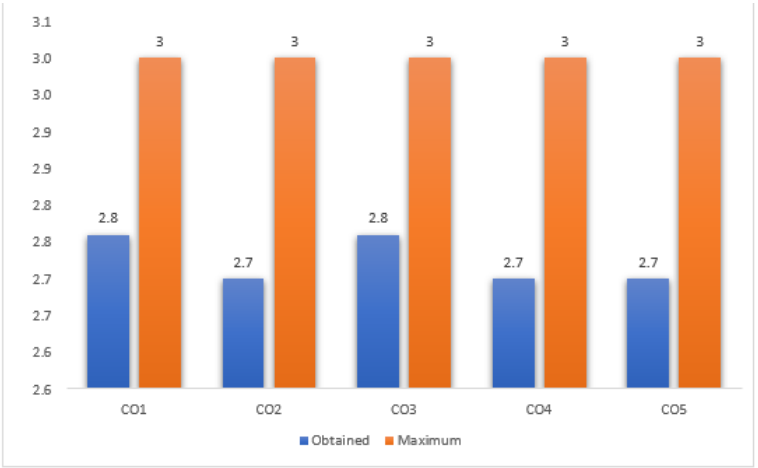
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
2	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
3	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
4	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
5	**S**	**H**	**H**		**S**		**S**	**S**	**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	91.7	3.0			102.1	3.0	102.1	3.0	102.1	3.0	8.3	0.0	2.4	89.6	3.0	3.0	2.8
CO2	91.7	3.0			102.1	3.0			102.1	3.0	8.3	0.0	2.3	89.6	3.0	3.0	2.7
CO3	91.7	3.0	87.5	3.0	102.1	3.0			102.1	3.0	8.3	0.0	2.4	89.6	3.0	3.0	2.8
CO4			87.5	3.0	102.1	3.0			102.1	3.0	8.3	0.0	2.3	89.6	3.0	3.0	2.7
CO5			87.5	3.0	102.1	3.0			102.1	3.0	8.3	0.0	2.3	89.6	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 SERVER ADMINISTRATION

COURSE CODE: CE20402

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: Choose different editions of operating system	I(REMEMBER)

CO2	CO2: Organize topologies in active directory	IV(ANALYZE)
CO3	CO3: Compare different services in active directory	III (APPLY)
CO4	CO4: Compare networking services	IV(ANALYZE)
CO5	CO5: Plan installation of required services in organization	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**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**S**	**H**	**H**	
2	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	
3	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	

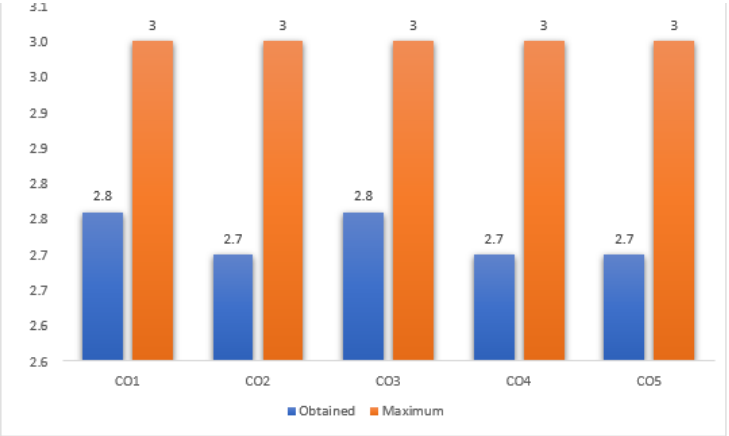
4	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**S**	
5	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	

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	91.7	3.0			102.1	3.0	102.1	3.0	102.1	3.0	10.4	0.0	2.4	95.8	3.0	3.0	2.8
CO2	91.7	3.0			102.1	3.0			102.1	3.0	10.4	0.0	2.3	95.8	3.0	3.0	2.7
CO3	91.7	3.0	85.4	3.0	102.1	3.0			102.1	3.0	10.4	0.0	2.4	95.8	3.0	3.0	2.8
CO4			85.4	3.0	102.1	3.0			102.1	3.0	10.4	0.0	2.3	95.8	3.0	3.0	2.7
CO5			85.4	3.0	102.1	3.0			102.1	3.0	10.4	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							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: COMPUTER ORGANIZATION

COURSE CODE: CE20403

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: Demonstrate knowledge of register organization of a basic computer system	III (APPLY)
CO2	CO2: Explain machine language of a basic computer system..	IV(ANALYZE)
CO3	CO3: Appraise in-depth understanding of control unit organization and micro programmed control.	III (APPLY)
CO4	CO4: Apply various algorithms to perform arithmetic operations and propose suitable hardware for them	VI(CREATE)
CO5	CO5: Analyze and emphasize various communication media in the basic computer system using design of various memory structures	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**	**S**	**S**		**S**	**S**	**H**	**S**		**S**	

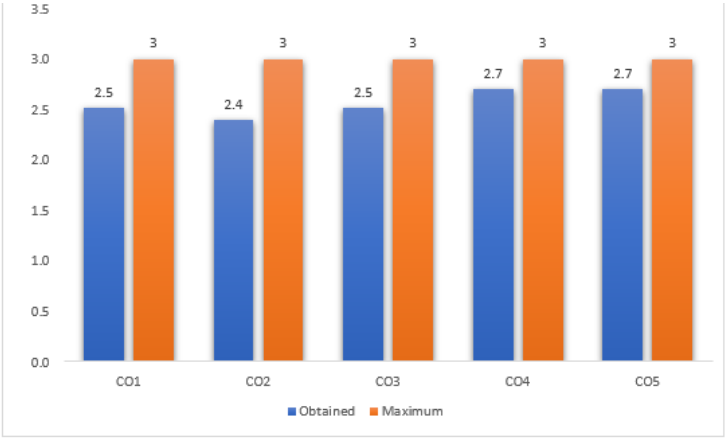
2	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**S**	
3	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**H**	
4	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**S**	
5	**H**	**S**	**H**	**H**	**S**		**S**	**H**	**H**	**H**		**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
Pass percent between 75% - 85%= 2
Pass percent between 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	60.4	0.0			102.1	3.0	102.1	3.0	102.1	3.0	6.3	0.0	1.8	95.8	3.0	3.0	2.5
CO2	60.4	0.0			102.1	3.0			102.1	3.0	6.3	0.0	1.5	95.8	3.0	3.0	2.4
CO3	60.4	0.0	93.8	3.0	102.1	3.0			102.1	3.0	6.3	0.0	1.8	95.8	3.0	3.0	2.5
CO4			93.8	3.0	102.1	3.0			102.1	3.0	6.3	0.0	2.3	95.8	3.0	3.0	2.7
CO5			93.8	3.0	102.1	3.0			102.1	3.0	6.3	0.0	2.3	95.8	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.568

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 2.52		H 2.52	H 2.52	H 2.52		H 2.52	
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	2.568		2.568	2.58	2.52		2.54	2.7
AVERAGE OF POS	2.5776		2.5776	2.58	2.52		2.54	2.7
AVERAGE	2.582533333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: OPERATING SYSTEMS **COURSE CODE: BS18430** **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: Explain functions, types and structures of operating system	VI(CREATE)
CO2	CO2: Analyze various process management concepts including scheduling and synchronization	IV(ANALYZE)
CO3	CO3: Illustrate the concepts of memory management and I/O system.	III (APPLY)
CO4	CO4: Solve issues related to file system interface.	IV(ANALYZE)
CO5	CO5: Choose an appropriate Page replacement algorithm	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

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

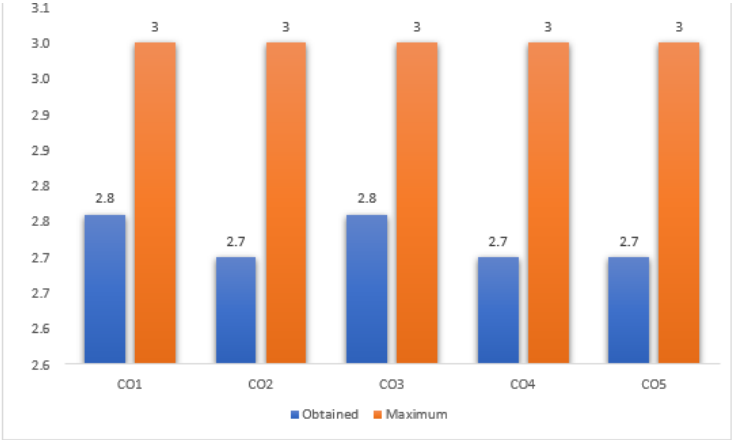
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
2	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
3	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
4	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
5	**H**	**H**	**H**	**H**	**H**	**S**	**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	85.4	3.0			102.1	3.0	102.1	3.0	102.1	3.0	4.2	0.0	2.4	93.8	3.0	3.0	2.8
CO2	85.4	3.0			102.1	3.0			102.1	3.0	4.2	0.0	2.3	93.8	3.0	3.0	2.7
CO3	85.4	3.0	95.8	3.0	102.1	3.0			102.1	3.0	4.2	0.0	2.4	93.8	3.0	3.0	2.8
CO4			95.8	3.0	102.1	3.0			102.1	3.0	4.2	0.0	2.3	93.8	3.0	3.0	2.7
CO5			95.8	3.0	102.1	3.0			102.1	3.0	4.2	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: MICROPROCESSORS AND MICROCONTROLLERS

COURSE CODE: BS20404

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: Explain the architecture of 8086 based micro computer	IV(ANALYZE)
CO2	CO2: Develop the assembly language programs for 8086 based micro computer	VI(CREATE)
CO3	CO3: Develop the interfacing circuits for 8086 based micro computer	VI(CREATE)
CO4	CO4: Explain 8086 based microcomputer interrupt mechanism	IV(ANALYZE)
CO5	CO5: Explain the architecture of 8051 micro controller	III(APPLY)

Table 1: CO, PO, PSO MAPPING

Course	Programme Outcomes	Program Specific outcomes

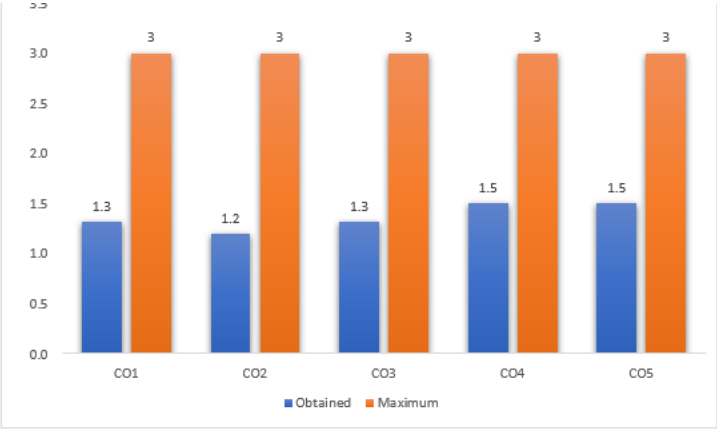
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**H**		**S**	**H**			**S**	**H**	**H**	**H**		**H**	
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**		**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	64.6	0.0			102.1	3.0	102.1	3.0	102.1	3.0	6.3	0.0	1.8	75.0	1.0	1.0	1.3
CO2	64.6	0.0			102.1	3.0			102.1	3.0	6.3	0.0	1.5	75.0	1.0	1.0	1.2
CO3	64.6	0.0	91.7	3.0	102.1	3.0			102.1	3.0	6.3	0.0	1.8	75.0	1.0	1.0	1.3
CO4			91.7	3.0	102.1	3.0			102.1	3.0	6.3	0.0	2.3	75.0	1.0	1.0	1.5
CO5			91.7	3.0	102.1	3.0			102.1	3.0	6.3	0.0	2.3	75.0	1.0	1.0	1.5

AVERAGE	AVERAGE
1	1.368

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 1.32		H 1.32					
CO2	H 1.2		H 1.2	H 1.2			H 1.2	
CO3	H 1.32		H 1.32	H 1.32	H 1.32		H 1.32	
CO4	H 1.5		H 1.5	H 1.5			H 1.5	
CO5	H 1.5		H 1.5	H 1.5				H 1.5
AVERAGE OF COS FOR POS	1.368		1.368	1.38	1.32		1.34	1.5
AVERAGE OF POS	1.3776		1.3776	1.38	1.32		1.34	1.5
AVERAGE	1.382533333							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PYTHON PROGRAMMING

COURSE CODE: CE20405

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: Explain the basics of Python Programming constructs.	IV(ANALYZE)
CO2	CO2: Sub divides larger problems into smaller ones using functions	VI(CREATE)
CO3	CO3: Apply various data structures for problem solving	VI(CREATE)
CO4	CO4: Apply object-oriented programming features for solving a given problem	IV(ANALYZE)
CO5	CO5: Select an appropriate exception handling depending on application and design file operations using Python standard library	III(APPLY)

Table 1: CO, PO, PSO MAPPING

Course	Programme Outcomes	Program Specific outcomes

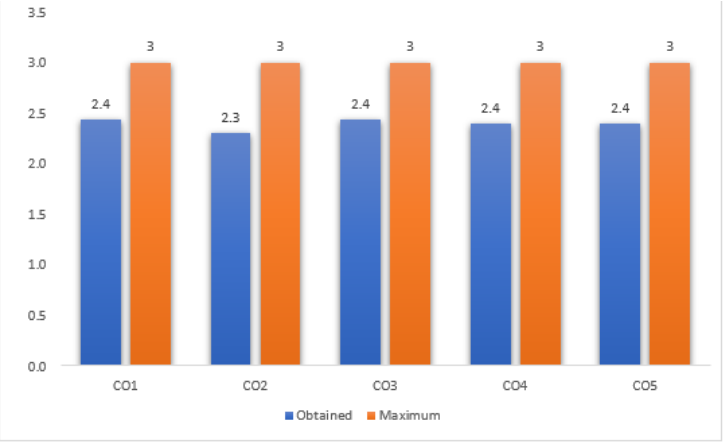
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**H**		**S**	**H**			**S**	**H**	**H**	**H**		**H**	
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**		**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	79.2	2.0			102.1	3.0	102.1	3.0	8.3	0.0	8.3	0.0	1.6	95.8	3.0	3.0	2.4
CO2	79.2	2.0			102.1	3.0			8.3	0.0	8.3	0.0	1.3	95.8	3.0	3.0	2.3
CO3	79.2	2.0	91.7	3.0	102.1	3.0			8.3	0.0	8.3	0.0	1.6	95.8	3.0	3.0	2.4
CO4			91.7	3.0	102.1	3.0			8.3	0.0	8.3	0.0	1.5	95.8	3.0	3.0	2.4
CO5			91.7	3.0	102.1	3.0			8.3	0.0	8.3	0.0	1.5	95.8	3.0	3.0	2.4

AVERAGE	AVERAGE
3	2.396

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.44		H 2.44					
CO2	H 2.3		H 2.3	H 2.3			H 2.3	
CO3	H 2.44		H 2.44	H 2.44	H 2.44		H 2.44	
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	2.396		2.396	2.385	2.44		2.38	2.4
AVERAGE OF POS	2.3872		2.3872	2.385	2.44		2.38	2.4
AVERAGE	2.396566667							

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.

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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.
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- **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**	

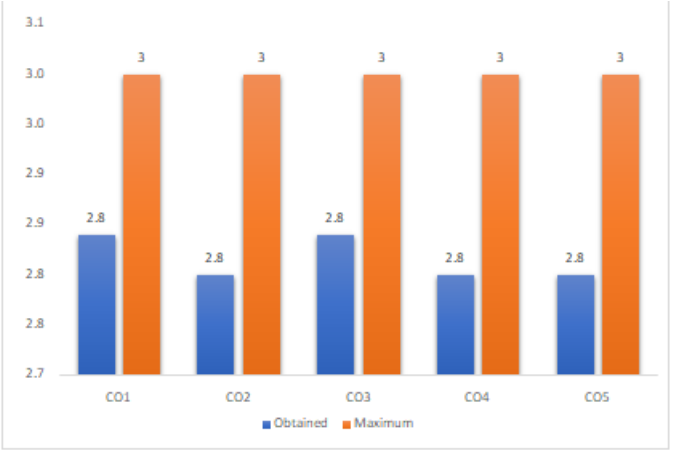
1	**H**		**H**	**H**			**S**	**H**		**H**		**H**	
2	**S**		**S**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	
4	**S**		**S**	**H**	**H**		**S**	**H**		**H**		**H**	
5	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	

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	100.0	3.0			100.0	3.0	98.0	3.0	100.0	3.0	68.0	1.0	2.6	96.0	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	68.0	1.0	2.5	96.0	3.0	3.0	2.8
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	68.0	1.0	2.6	96.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	68.0	1.0	2.5	96.0	3.0	3.0	2.8
CO5			100.0	3.0	100.0	3.0			100.0	3.0	68.0	1.0	2.5	96.0	3.0	3.0	2.8

AVERAGE	AVERAGE
3	2.816

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.84		H 2.84				H 2.84	
CO2								
CO3			H 2.84	H 2.84	H 2.84			H 2.84
CO4	H 2.8	H 2.8	H 2.8	H 2.8				
CO5	H 2.8		H 2.8	H 2.8				H 2.8
AVERAGE OF COS FOR POS	2.813333333	2.8	2.82	2.813333333	2.84		2.84	2.82
AVERAGE OF POS	2.804444	2.8	2.815	2.813333	2.84		2.84	2.82
AVERAGE	2.818968254							

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**	

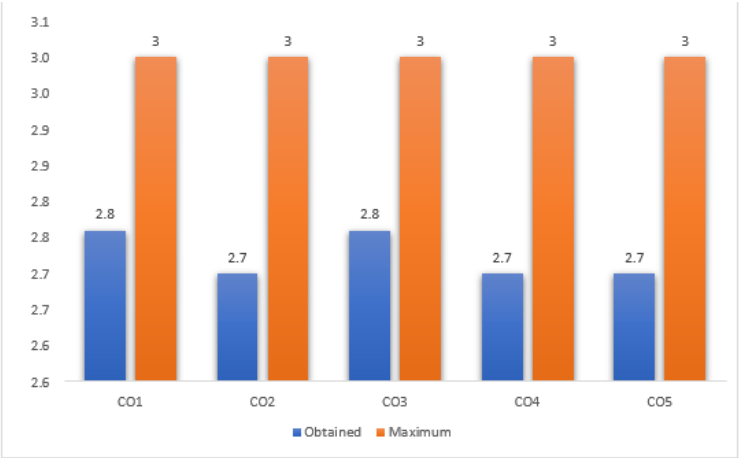
1	**H**		**H**	**S**			**S**	**S**		**S**		**H**	
2	**H**		**H**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**H**		**H**	**S**		**H**		**H**	
4	**S**		**H**	**H**	**S**		**S**	**S**		**H**		**S**	
5	**H**		**H**	**H**	**S**		**S**	**H**		**H**		**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
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 : 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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- **PO8:** Life-long learning: Recognize 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 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**	

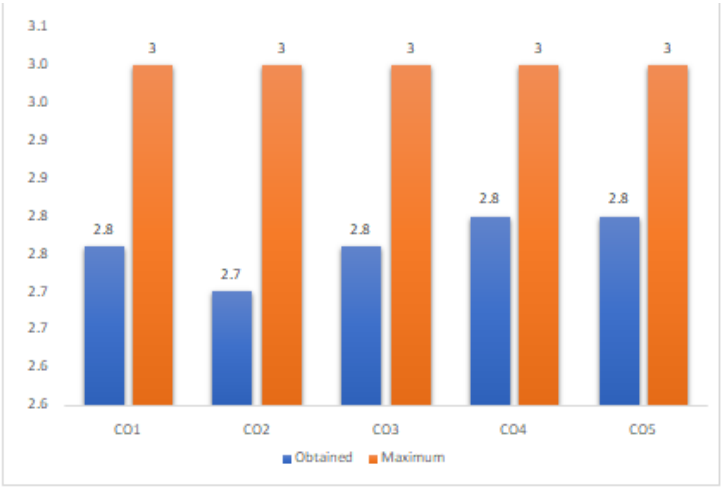
2	**S**	**S**	**S**	**S**	**S**		**S**	**S**	**H**	**H**	**S**	**H**	
3	**S**	**S**	**H**	**H**	**H**	**S**	**S**	**H**	**H**	**H**	**S**	**S**	
4	**H**	**H**	**H**	**H**	**S**			**S**	**H**	**H**	**S**	**S**	
5	**H**	**S**	**H**	**H**	**S**			**H**	**H**	**H**	**S**	**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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	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

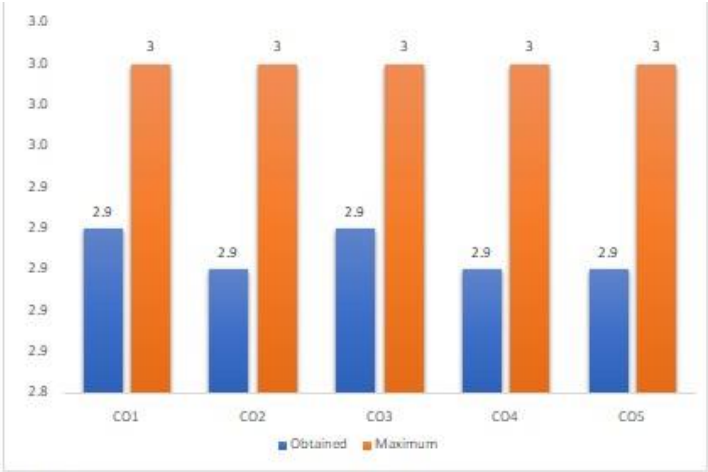
Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	H	H	H			S	H	H	H	H	H	
2	H	S	H	H	H		H	H	H	H	H	H	
3	H	S	S	H	S	S	H	H	H	H	H	H	
4	H	S	H	H	S	S	H	H	H	H	H	H	
5	H	S	H	H	S	S	H	S	H	H	S	S	

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	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	82.0	2.0	2.8	100.0	3.0	3.0	2.9
CO2	100.0	3.0			100.0	3.0			100.0	3.0	82.0	2.0	2.8	100.0	3.0	3.0	2.9
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	82.0	2.0	2.8	100.0	3.0	3.0	2.9
CO4			100.0	3.0	100.0	3.0			100.0	3.0	82.0	2.0	2.8	100.0	3.0	3.0	2.9
CO5			100.0	3.0	100.0	3.0			100.0	3.0	82.0	2.0	2.8	100.0	3.0	3.0	2.9

AVERAGE	AVERAGE
3	2.908

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		H 2.9	H 2.9
CO3	H 2.92		H 2.92	H 2.92			H 2.92	H 2.92
CO4	H 2.9		H 2.9	H 2.9			H 2.9	H 2.9
CO5		H 2.9	H 2.9					H 2.9
AVERAGE OF COS FOR POS	2.906666667	2.91	2.908	2.906666667	2.9		2.906666667	2.908
AVERAGE OF POS	2.906667	2.905	2.9056	2.906667	2.9		2.906667	2.9056
AVERAGE	2.905171429							

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
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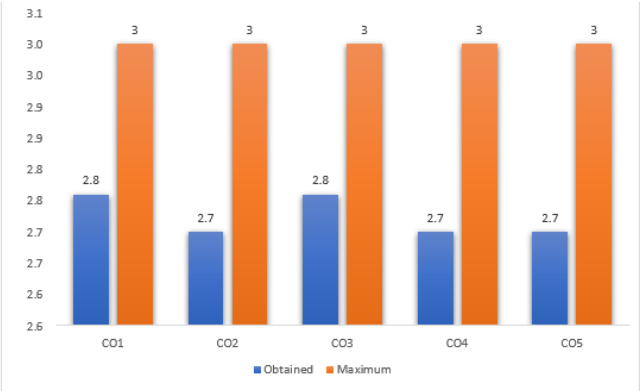
Pass percent of less than 65%= 0



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	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.
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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: 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			

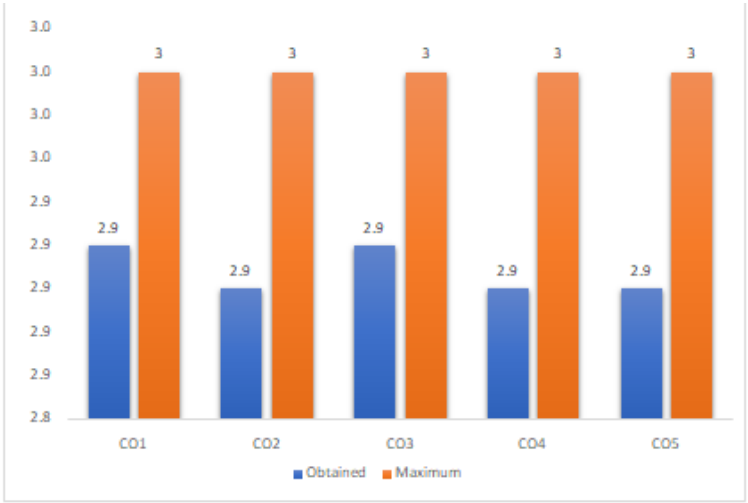
H: Highly Supportive **S: Supportive**

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.
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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: 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
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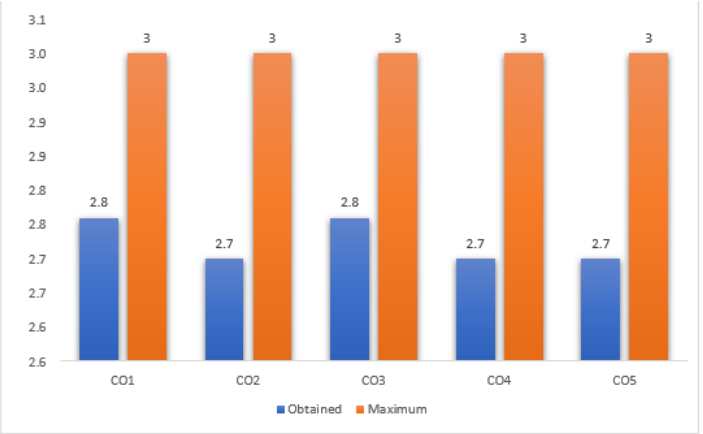


co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	95.8	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							

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

Subject Code	Title of the Subject	
RY		
CE21601A	Cloud Computing (DSE-2)	
CE21601B	Internet of Things (DSE-2)	
CE21602A	Web Application Testing (DSE-3)	
CE21602B	Big Data Analytics (DSE-3)	
CE21603	Cryptography and Network Security (Core-18)	

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: CLOUD COMPUTING

COURSE CODE: CE21601A

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: Explain differences of system models.	I(REMEMBER)

CO2	CO2: Identify different types of clouds	IV(ANALYZE)
CO3	CO3: Analyze virtualization and data centre working procedure	III (APPLY)
CO4	CO4: Classify public cloud platforms CO5: Choose a particular data security in the cloud	IV(ANALYZE)
CO5	CO5: Choose a particular data security in the cloud	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**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**S**	**H**	**H**	
2	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	
3	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	

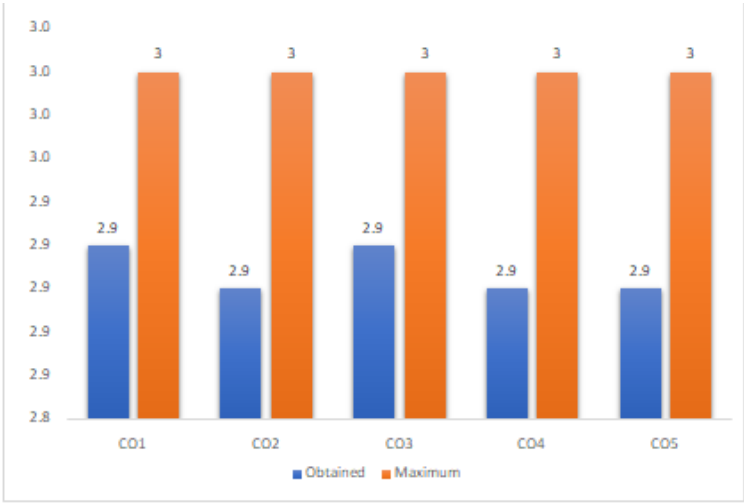
4	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**S**	
5	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	

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	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: INTERNET OF THINGS

COURSE CODE: CE21601B

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 the importance of IOT and its applications	III (APPLY)
CO2	CO2: Differentiate between IOT and M2M, SDN and NFV	IV(ANALYZE)
CO3	CO3: Understand building of IOT devices and Raspberry PI	III (APPLY)
CO4	CO4: Explain working of WAMP server and AWS	VI(CREATE)
CO5	CO5: Understand applications and analytics of IoT	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**	**S**	**S**		**S**	**S**	**H**	**S**		**S**	

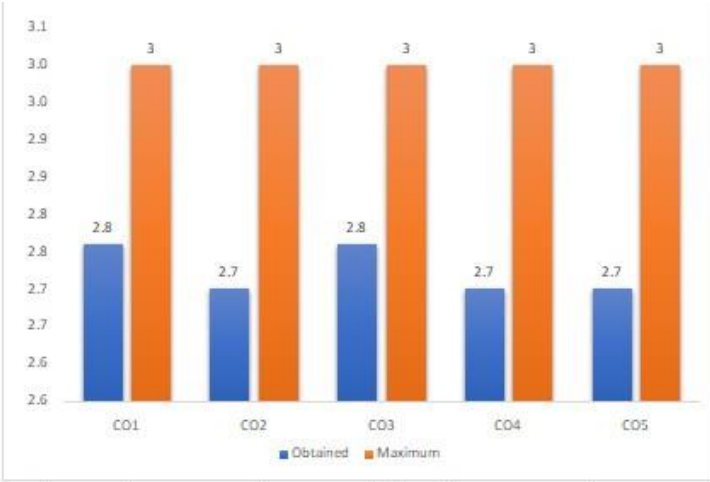
2	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**S**	
3	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**H**	
4	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**S**	
5	**H**	**S**	**H**	**H**	**S**		**S**	**H**	**H**	**H**		**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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



co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	96.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	44.0	0.0	2.4	92.0	3.0	3.0	2.8
CO2	96.0	3.0			100.0	3.0			100.0	3.0	44.0	0.0	2.3	92.0	3.0	3.0	2.7
CO3	96.0	3.0	96.0	3.0	100.0	3.0			100.0	3.0	44.0	0.0	2.4	92.0	3.0	3.0	2.8
CO4			96.0	3.0	100.0	3.0			100.0	3.0	44.0	0.0	2.3	92.0	3.0	3.0	2.7
CO5			96.0	3.0	100.0	3.0			100.0	3.0	44.0	0.0	2.3	92.0	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	H 2.76	H 2.76	H 2.76		H 2.76	H 2.76
CO2	H 2.7	H 2.7	H 2.7	H 2.7	H 2.7		H 2.7	H 2.7
CO3	H 2.76	H 2.76	H 2.76	H 2.76	H 2.76		H 2.76	H 2.76
CO4	H 2.7	H 2.7	H 2.7	H 2.7	H 2.7		H 2.7	H 2.7
CO5	H 2.7	H 2.7	H 2.7	H 2.7	H 2.7		H 2.7	H 2.7
AVERAGE OF COS FOR POS	2.724	2.724	2.724	2.724	2.724		2.724	2.724
AVERAGE OF POS	2.7168	2.7168	2.7168	2.7168	2.7168		2.7168	2.7168
AVERAGE	2.7168							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: WEB APPLICATION TESTING **COURSE CODE: CE21602A** **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.
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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: Identify Web application technologies	VI(CREATE)
CO2	CO2: Experiment using Client-Side Controls	IV(ANALYZE)
CO3	CO3: Explain authentication and authorization	III (APPLY)
CO4	CO4: Implement SQL injection	IV(ANALYZE)
CO5	CO5: Develop Cross-Site Scripting	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

Course	Programme Outcomes	Program Specific outcomes

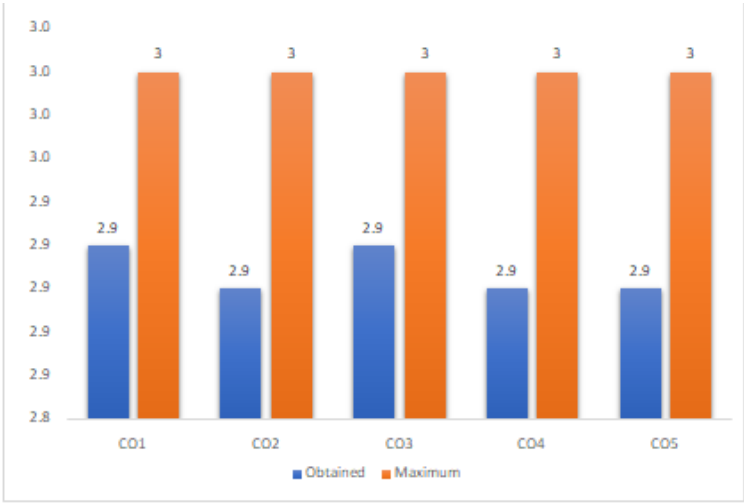
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
2	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
3	**H**	**H**	**H**	**H**	**H**	**S**	**S**	**H**	**S**	**H**	**H**	**H**	
4	**H**	**H**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

COURSE CODE: CE21602B

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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- **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 Big Data concepts and various technologies to handle it.	IV(ANALYZE)
CO2	CO2: Use Hadoop Ecosystem and Map Reduce to process Big Data.	VI(CREATE)
CO3	CO3: Analyze data processing through MapReduce	VI(CREATE)
CO4	CO4: Choose YARN for resource management and Hive for data storage.	IV(ANALYZE)
CO5	CO5: Develop Map Reduce Programming using Pig and data management using NoSQL	III(APPLY)

Table 1: CO, PO, PSO MAPPING

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

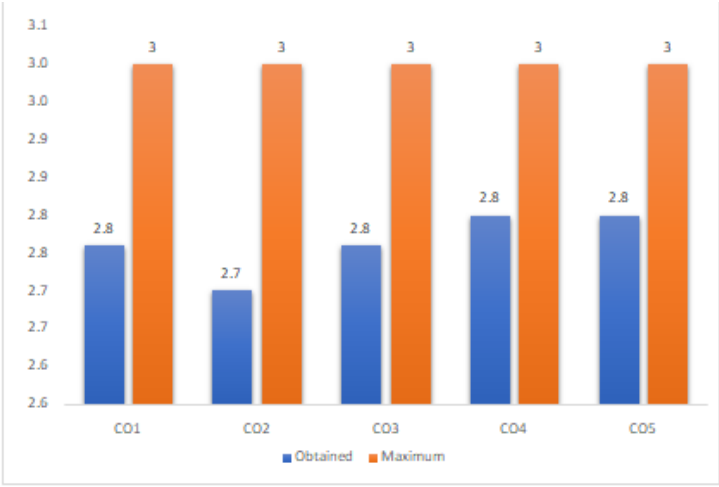
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**H**		**S**	**H**			**S**	**H**	**H**	**H**		**H**	
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**	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

COURSE CODE: CE21603

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 information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fields and number theory.	IV(ANALYZE)
CO2	CO2: Apply Public Key Cryptographic Technique for securing messages	VI(CREATE)
CO3	CO3: Use an appropriate message authentication code.	VI(CREATE)
CO4	CO4: Compare the performance of different message digest algorithms for verifying the integrity of varying message sizes	IV(ANALYZE)
CO5	CO5: Compare different IEEE standards and electronic mail security	III(APPLY)

Table 1: CO, PO, PSO MAPPING

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

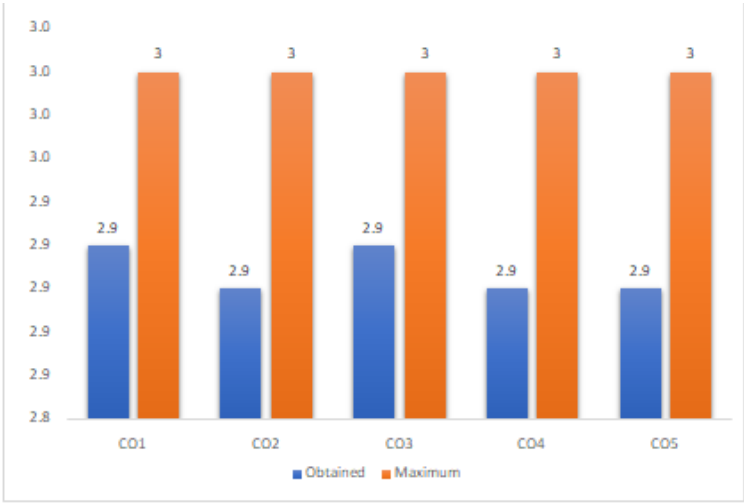
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**H**		**S**	**H**			**S**	**H**	**H**	**H**		**H**	
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**	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