COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: CRYPTOGRAPHIC ALGORITHMS

COURSE CODE:CSCS22302

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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

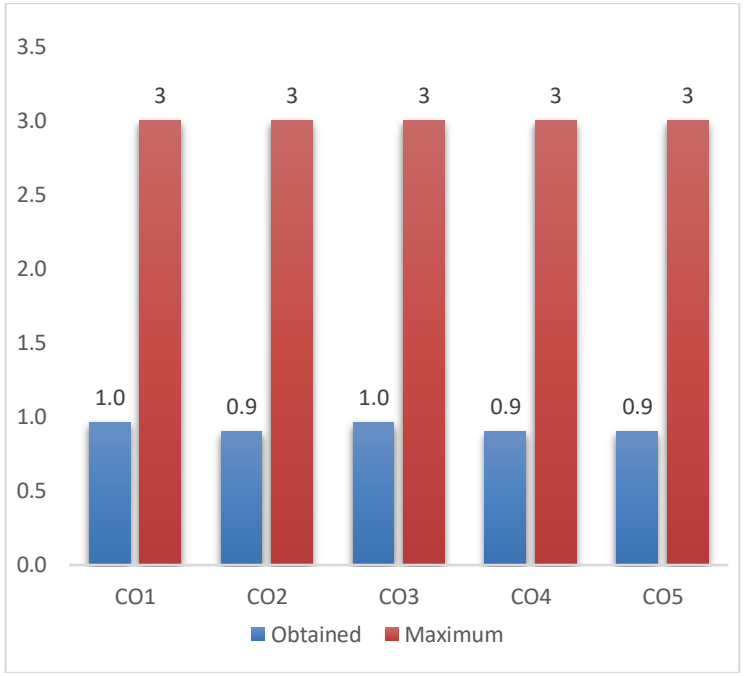
1			H							S			
2		H								H			
3				H						S			
4							H				S		
5			S								S		

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



Obtained Maximum

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	50.0	0.0	2.4	32.0	0.0	0.0	1.0
CO2	100.0	3.0			100.0	3.0			100.0	3.0	50.0	0.0	2.3	32.0	0.0	0.0	0.9
CO3	100.0	3.0	90.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.4	32.0	0.0	0.0	1.0
CO4			90.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.3	32.0	0.0	0.0	0.9
CO5			90.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.3	32.0	0.0	0.0	0.9

d

AVERAGE	AVERAGE
0	0.924

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1			H 0.96					
CO2		H 0.9						
CO3				H 0.96				
CO4							H 0.9	
CO5								
AVERAGE OF COS FOR POS		0.9	0.96	0.96			0.9	
AVERAGE OF POS		0.9	0.96	0.96			0.9	
AVERAGE	0.93							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ETHICAL HACKING

COURSE CODE:CSCS22301

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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 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	COl: **Explain** essential terminology and phases of hacking	III (APPLY)
CO2	**CO2: Identify** different types of scanning methods	IV(ANALYZE)
CO3	**CO3: Analyse** how to perform IP Spoofing	III (APPLY)
CO4	**CO4: Understand** Sniffing and Social Engineering	VI(CREATE)
CO5	**CO5: Understanding** Session Hijacking and DDoS concepts .	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**	

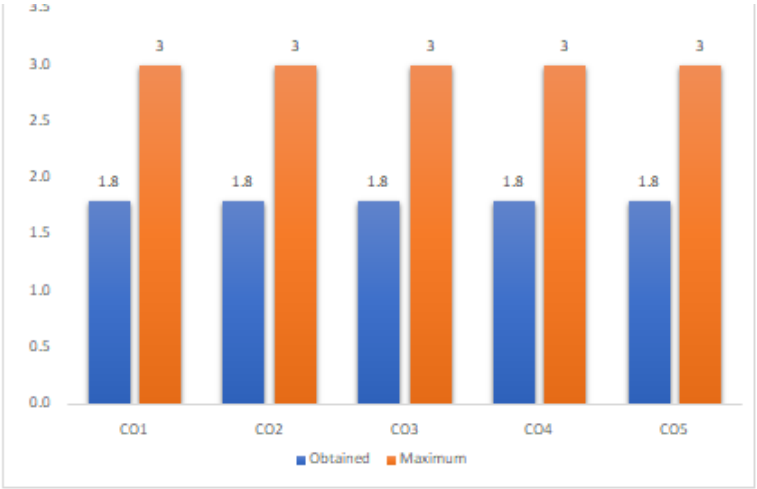
1	H								H			H	
2			H								H		
3				H						H			
4				H							H		
5		H									H		

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	92.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	100.0	3.0	3.0	72.0	1.0	1.0	1.8
CO2	92.0	3.0			100.0	3.0			100.0	3.0	100.0	3.0	3.0	72.0	1.0	1.0	1.8
CO3	92.0	3.0	94.0	3.0	100.0	3.0			100.0	3.0	100.0	3.0	3.0	72.0	1.0	1.0	1.8
CO4			94.0	3.0	100.0	3.0			100.0	3.0	100.0	3.0	3.0	72.0	1.0	1.0	1.8
CO5			94.0	3.0	100.0	3.0			100.0	3.0	100.0	3.0	3.0	72.0	1.0	1.0	1.8

AVERAGE	AVERAGE
1	1.8

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 1.8							
CO2			H 1.8					
CO3				H 1.8				
CO4				H 1.8				
CO5		H 1.8						
AVERAGE OF COS FOR POS	1.8	1.8	1.8	1.8				
AVERAGE OF POS	1.8	1.8	1.8	1.8				
AVERAGE	1.8							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ENVIRONMENTAL STUDIES & GENDER SENSITIZATION

COURSE CODE: ES23301

CREDITS: 3

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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: 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	**COl**: Understand the importance of Environmental education, conservation of natural resources & understand the importance of ecosystems and biodiversity.	II (UNDERSTAND)
CO2	**CO2:** Understand the pollution problems and apply the environmental science knowledge on solid waste management, disaster management.	III (APPLY)

CO3	**CO3:** Apply the environmental science knowledge to improve the resources Evaluate and understand the sustainable environmental conditions and control methods.	II (UNDERSTAND)
CO4	**CO4:** Identify the interactions and inter sections 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	II (UNDERSTAND)
CO5	**CO5:** Understand the gender problems and ways of addressing them, including interactions across local to global scales in communities and overcome inequalities with legislation	V(EVALUATE)

Table 1: CO, PO, PSO MAPPING

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

5					H								

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
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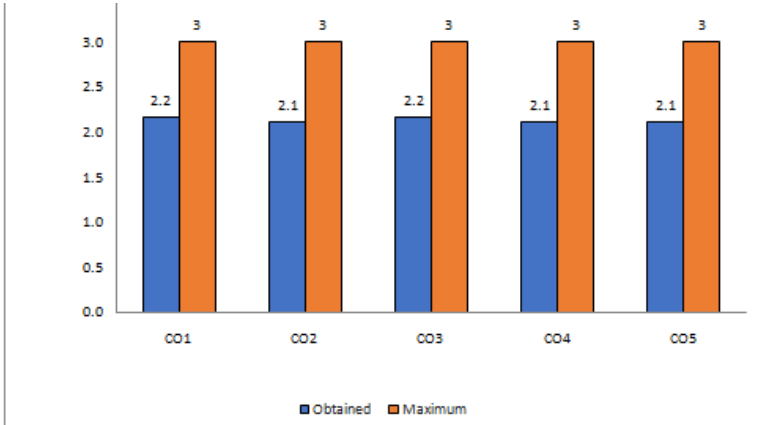

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	co wise internal	pass%	Attainment	co wise external	co wise total
CO1	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	44.0	0.0	2.4	82.0	2.0	2.0	2.2
CO2	100.0	3.0			100.0	3.0			100.0	3.0	44.0	0.0	2.3	82.0	2.0	2.0	2.1
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	44.0	0.0	2.4	82.0	2.0	2.0	2.2
CO4			100.0	3.0	100.0	3.0			100.0	3.0	44.0	0.0	2.3	82.0	2.0	2.0	2.1
CO5			100.0	3.0	100.0	3.0			100.0	3.0	44.0	0.0	2.3	82.0	2.0	2.0	2.1

AVERAGE	AVERAGE
2	2.124

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1					H 2.16			
CO2					H 2.1			
CO3							H 2.16	
CO4					H 2.1			
CO5					H 2.1			
AVERAGE OF COS FOR POS					2.115		2.16	
AVERAGE OF POS					2.1038		2.16	
AVERAGE	2.131875							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PYTHON PROGRAMMING

COURSE CODE:CSCS21304

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

- **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.
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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.

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	COl: **Explain** the basics of Python Programming constructs	III (APPLY)
CO2	**CO2: Sub divides** larger problems into smaller ones using functions	III (APPLY)
CO3	**CO3: Apply** various data structures for problem solving	III (APPLY)
CO4	**CO4: Apply** object-oriented programming features for solving a given problem	V(EVALUATE)
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 outcomes	**Programme Outcomes**								**Program Specific outcomes**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**P08**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	

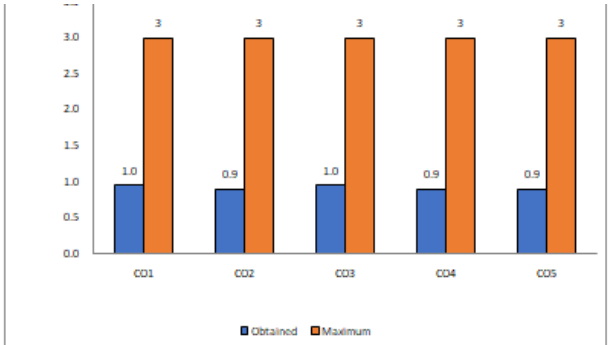
1	H								H			H	
2		S									S		
3			H								S		
4		H		S						S			
5		H							H				

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	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	co wise internal	pass%	Attainment	co wise external	co wise total
CO1	97.9	3.0			102.1	3.0	102.1	3.0	102.1	3.0	48.9	0.0	2.4	31.9	0.0	0.0	1.0
CO2	97.9	3.0			102.1	3.0			102.1	3.0	48.9	0.0	2.3	31.9	0.0	0.0	0.9
CO3	97.9	3.0	97.9	3.0	102.1	3.0			102.1	3.0	48.9	0.0	2.4	31.9	0.0	0.0	1.0
CO4			97.9	3.0	102.1	3.0			102.1	3.0	48.9	0.0	2.3	31.9	0.0	0.0	0.9
CO5			97.9	3.0	102.1	3.0			102.1	3.0	48.9	0.0	2.3	31.9	0.0	0.0	0.9

AVERAGE	AVERAGE
0	0.924

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 0.96							
CO2								
CO3			H 0.96					
CO4		H 0.9						
CO5		H 0.9						
AVERAGE OF COS FOR POS	0.96	0.9	0.96					
AVERAGE OF POS	0.96	0.9	0.96					
AVERAGE	0.94							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: SERVER ADMINISTRATION

COURSE CODE:CSCS21303

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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.
- **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	COl: **Describe** Installation of Linux and User Administration	IV(ANALYZE)
CO2	**CO2: Explain** the use of SUDo and Configuring VNC	V(EVALUATE)
CO3	**CO3: Explain**configuration http and mail server.	II(UNDERSTAND)
CO4	**CO4: Explain** configuration SAMBA and LDAP	IV(ANALYZE))
CO5	**CO5: Explain** the concepts of Infrastructure services	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**	

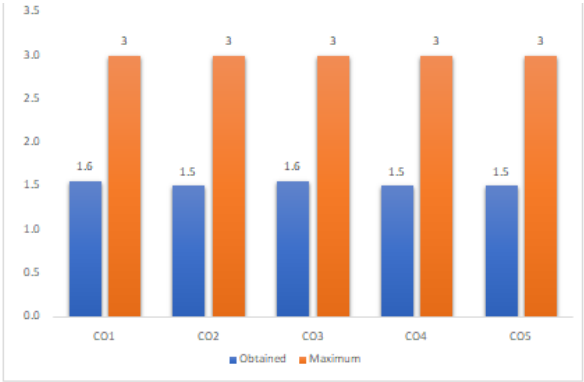
1				H							S		
2		H								S			
3				H						H			
4				H						S			
5			S						S				

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	98.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	54.0	0.0	2.4	66.0	1.0	1.0	1.6
CO2	98.0	3.0			100.0	3.0			100.0	3.0	54.0	0.0	2.3	66.0	1.0	1.0	1.5
CO3	98.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	54.0	0.0	2.4	66.0	1.0	1.0	1.6
CO4			100.0	3.0	100.0	3.0			100.0	3.0	54.0	0.0	2.3	66.0	1.0	1.0	1.5
CO5			100.0	3.0	100.0	3.0			100.0	3.0	54.0	0.0	2.3	66.0	1.0	1.0	1.5

d

AVERAGE	AVERAGE
1	1.524

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1				H 1.56				
CO2		H 1.5						
CO3				H 1.56				
CO4				H 1.5				
CO5								
AVERAGE OF COS FOR POS		1.5		1.54				
AVERAGE OF POS		1.5		1.533333				
AVERAGE	1.516666667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE:COMPUTER FORENSICS

COURSE CODE: CSCS21402

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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**: **To Understand** Computer Forensics in detail.	VI(CREATE)
CO2	**CO2**: **Identify** the types of Evidence and Methods of collecting evidence.	VI(CREATE)
CO3	**CO3**: **To Explain** Computer Forensics analysis and validation	VI(CREATE)
CO4	**CO4**: To **Analyse** CurrentComputer Forensic tools	VI(CREATE)
CO5	**CO5**: To **Understand** acquisition procedures for cell phones and mobile devices	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**	

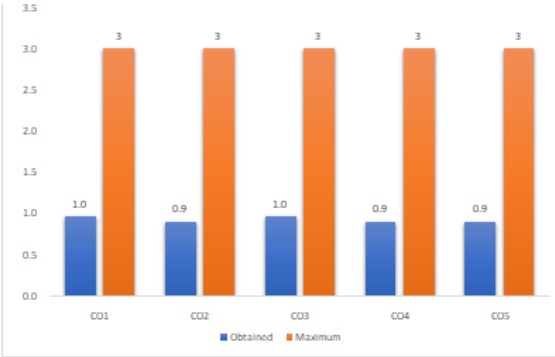
1					H				H				
2				H							S		
3			S									S	
4								H			H		
5								S			S		

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	97.8	3.0	100.0	3.0	43.5	0.0	2.4	47.8	0.0	0.0	1.0
CO2	100.0	3.0			100.0	3.0			100.0	3.0	43.5	0.0	2.3	47.8	0.0	0.0	0.9
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	43.5	0.0	2.4	47.8	0.0	0.0	1.0
CO4			100.0	3.0	100.0	3.0			100.0	3.0	43.5	0.0	2.3	47.8	0.0	0.0	0.9
CO5			100.0	3.0	100.0	3.0			100.0	3.0	43.5	0.0	2.3	47.8	0.0	0.0	0.9

AVERAGE	AVERAGE
0	0.924

d

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1					H 0.96			
CO2				H 0.9				
CO3								
CO4								H 0.9
CO5								
AVERAGE OF COS FOR POS				0.9	0.96			0.9
AVERAGE OF POS				0.9	0.96			0.9
AVERAGE	0.92							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE:CYBER ETHICS AND IPR **COURSE CODE: CSCS21403** **CREDITS: 4**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY
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:Learn** the conceptual and theoretical perspective of cyber laws Presentation	I (REMEMBER)
CO2	**CO2: Understand** the legalities through analysis of IT Act, 2000 Presentation	II(UNDERSTAND)
CO3	**CO3:Understand** the concepts of Trademark	II(UNDERSTAND)
CO4	**CO4: Understand** the relation between IPR laws Presentation	VI(CREATE)
CO5	**CO5: Understand** the importance of E-commerce	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				
2			H							S			
3								H					
4			S										
5							S			S			

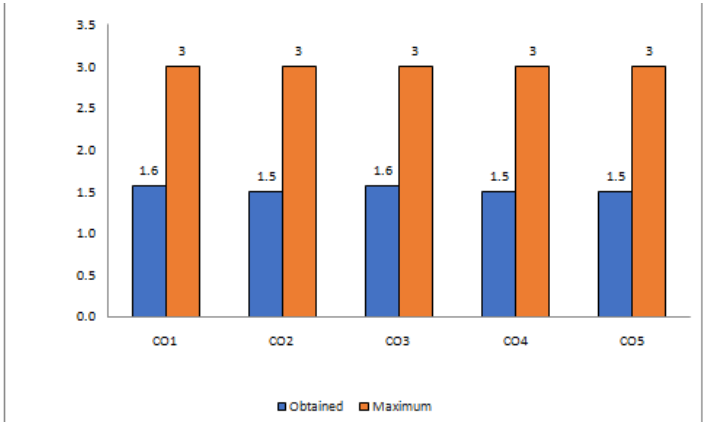
H: Highly Supportive **S: Supportive**

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	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	pass%	Attainment	co wise internal	pass%	Attainment	co wise external	co wise total
CO1	97.8	3.0			100.0	3.0	91.3	3.0	100.0	3.0	43.5	0.0	2.4	73.9	1.0	1.0	1.6
CO2	97.8	3.0			100.0	3.0			100.0	3.0	43.5	0.0	2.3	73.9	1.0	1.0	1.5
CO3	97.8	3.0	100.0	3.0	100.0	3.0			100.0	3.0	43.5	0.0	2.4	73.9	1.0	1.0	1.6
CO4			100.0	3.0	100.0	3.0			100.0	3.0	43.5	0.0	2.3	73.9	1.0	1.0	1.5
CO5			100.0	3.0	100.0	3.0			100.0	3.0	43.5	0.0	2.3	73.9	1.0	1.0	1.5

AVERAGE	AVERAGE
1	1.524

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 1.56							
CO2			H 1.5					
CO3								H 1.56
CO4								
CO5								
AVERAGE OF COS FOR POS	1.56		1.5					1.56
AVERAGE OF POS	1.56		1.5					1.56
AVERAGE	1.54							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE:DISCRETE MATHEMATICS

COURSE CODE: CSCS21401

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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** an understanding of Logic Sets and Functions	II (UNDERSTAND)
CO2	**CO2**: **Evaluate** and apply the fundamental concepts in graph theory	IV(ANALYZE)
CO3	**CO3**: **Develop** an understanding of how graph and tree concepts are used to solve problems arising in computer science.	III (APPLY)
CO4	**CO4: Express** the concepts and results of Euler and Hamiltonian graphs.	V(EVALUATE)
CO5	**CO5**: **Identify** methods and techniques used to represent flow through a network.	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

Course	Programme Outcomes	Program Specific outcomes

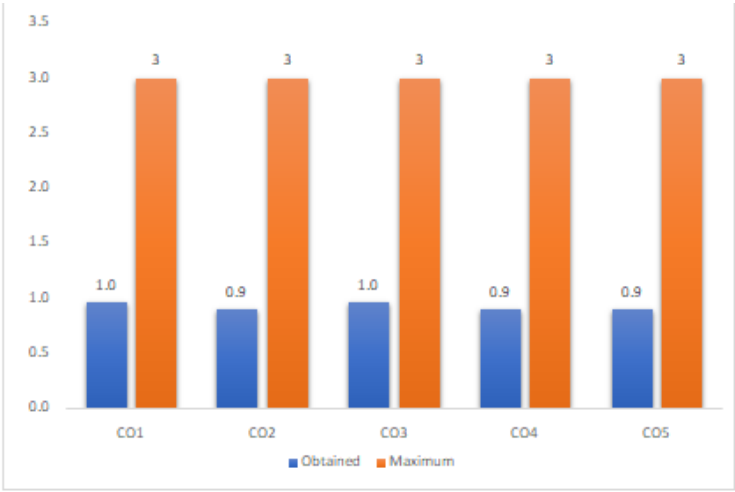
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1			H										
2		H							H				
3				H					H				
4							H		S				
5	H												

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	87.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	60.9	0.0	2.4	58.7	0.0	0.0	1.0
CO2	87.0	3.0			100.0	3.0			100.0	3.0	60.9	0.0	2.3	58.7	0.0	0.0	0.9
CO3	87.0	3.0	95.7	3.0	100.0	3.0			100.0	3.0	60.9	0.0	2.4	58.7	0.0	0.0	1.0
CO4			95.7	3.0	100.0	3.0			100.0	3.0	60.9	0.0	2.3	58.7	0.0	0.0	0.9
CO5			95.7	3.0	100.0	3.0			100.0	3.0	60.9	0.0	2.3	58.7	0.0	0.0	0.9

AVERAGE	AVERAGE
0	0.924

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1			H 0.96					
CO2		H 0.9						
CO3				H 0.96				
CO4							H 0.9	
CO5	H 0.9							
AVERAGE OF COS FOR POS	0.9	0.9	0.96	0.96			0.9	
AVERAGE OF POS	0.9	0.9	0.96	0.96			0.9	
AVERAGE	0.924							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: NETWORK SECURITY

COURSE CODE: CSCS21405

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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:**Understand** Basics of Network Security, Classes of Attacks	I(REMEMBER)

CO2	CO2:**Explain** about Secure Network Life Cycle Management	IV(ANALYZE)
CO3	CO3:**Demonstrate** Cisco Router Configuration.	III (APPLY)
CO4	CO4:**Learn** Securing the Cisco ISO image and ACS	IV(ANALYZE)
CO5	CO5:Explore about ACL and Firewall.	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				
2		H										S	
3				H									

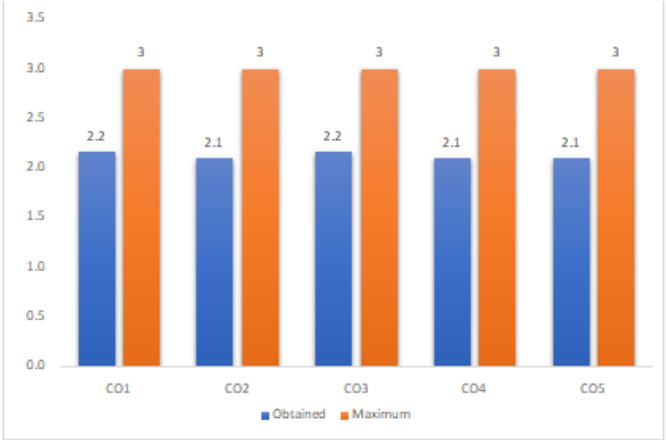
4								S			S		
5					S								

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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



co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	95.7	3.0			100.0	3.0	91.3	3.0	100.0	3.0	58.7	0.0	2.4	78.3	2.0	2.0	2.2
CO2	95.7	3.0			100.0	3.0			100.0	3.0	58.7	0.0	2.3	78.3	2.0	2.0	2.1
CO3	95.7	3.0	100.0	3.0	100.0	3.0			100.0	3.0	58.7	0.0	2.4	78.3	2.0	2.0	2.2
CO4			100.0	3.0	100.0	3.0			100.0	3.0	58.7	0.0	2.3	78.3	2.0	2.0	2.1
CO5			100.0	3.0	100.0	3.0			100.0	3.0	58.7	0.0	2.3	78.3	2.0	2.0	2.1

AVERAGE	AVERAGE
2	2.124

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.16							
CO2		H 2.1						
CO3				H 2.16				
CO4								
CO5								
AVERAGE OF COS FOR POS	2.16	2.1		2.16				
AVERAGE OF POS	2.16	2.1		2.16				
AVERAGE	2.14							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE:PYTHON SCRIPTING

COURSE CODE: CSCS21406

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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: 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**	

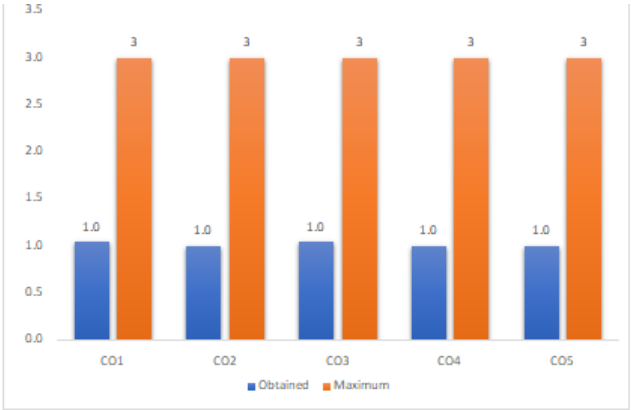
1		H									H		
2				H					S				
3			H							S			
4			H								S		
5				H						S			

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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



co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	95.7	3.0			100.0	3.0	100.0	3.0	100.0	3.0	67.4	1.0	2.6	52.2	0.0	0.0	1.0
CO2	95.7	3.0			100.0	3.0			100.0	3.0	67.4	1.0	2.5	52.2	0.0	0.0	1.0
CO3	95.7	3.0	100.0	3.0	100.0	3.0			100.0	3.0	67.4	1.0	2.6	52.2	0.0	0.0	1.0
CO4			100.0	3.0	100.0	3.0			100.0	3.0	67.4	1.0	2.5	52.2	0.0	0.0	1.0
CO5			100.0	3.0	100.0	3.0			100.0	3.0	67.4	1.0	2.5	52.2	0.0	0.0	1.0

AVERAGE	AVERAGE
0	1.016

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1		H 1.04						
CO2				H 1				
CO3			H 1.04					
CO4		H 1						
CO5				H 1				
AVERAGE OF COS FOR POS		1.02	1.04	1				
AVERAGE OF POS		1.01	1.04	1				
AVERAGE	1.016666667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE:WEB TECHNOLOGIES **COURSE CODE: CSCS21404** **CREDITS: 2**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY
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:**BASICS HTML	VI(CREATE)
CO2	**CO2:** To design and develop web pages using HTML, CSS positioning, servlets and JDBC.	IV(ANALYZE)
CO3	**CO3:**Basics to java script	III (APPLY)
CO4	**CO4:** To develop well-formed XML schemas and documents.	IV(ANALYZE)
CO5	**CO5:** To use PHP language for server side scripting	VI(CREATE)

Table 1: CO, PO, PSO MAPPING

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

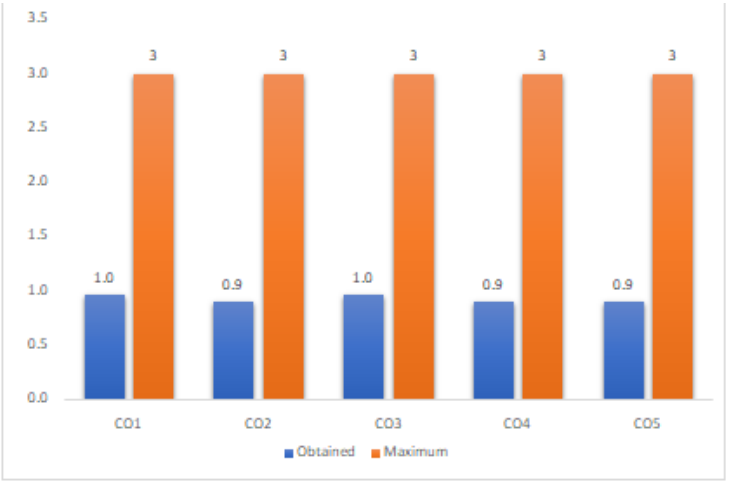
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	H								H			H	
2		H									S		
3	H								H			H	
4	H									S		H	
5				S						S			

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	87.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	54.3	0.0	2.4	19.6	0.0	0.0	1.0
CO2	87.0	3.0			100.0	3.0			100.0	3.0	54.3	0.0	2.3	19.6	0.0	0.0	0.9
CO3	87.0	3.0	87.0	3.0	100.0	3.0			100.0	3.0	54.3	0.0	2.4	19.6	0.0	0.0	1.0
CO4			87.0	3.0	100.0	3.0			100.0	3.0	54.3	0.0	2.3	19.6	0.0	0.0	0.9
CO5			87.0	3.0	100.0	3.0			100.0	3.0	54.3	0.0	2.3	19.6	0.0	0.0	0.9

AVERAGE	AVERAGE
0	0.924

Table 3: PROGRAMME OUTCOME MAPPING

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 0.96							
CO2		H 0.9						
CO3	H 0.96							
CO4	H 0.9							
CO5								
AVERAGE OF COS FOR POS	0.94	0.9						
AVERAGE OF POS	0.933333	0.9						
AVERAGE	0.916666667							

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: GENERALENGLISH I

COURSE CODE: EN18101

CREDITS: 3

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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**	

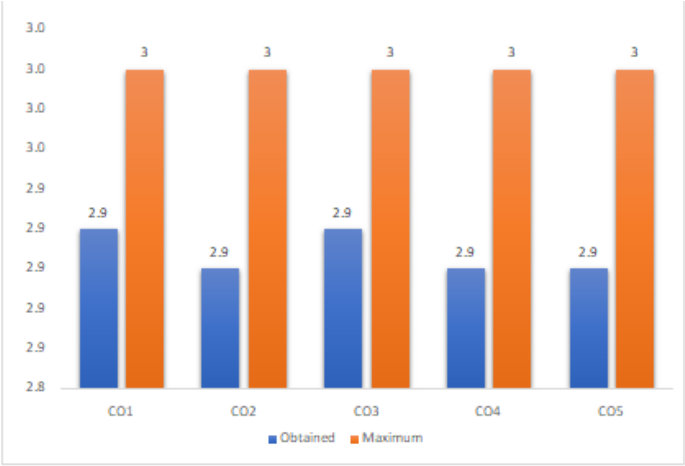
1	**H**		**H**	**H**			**S**	**H**		**H**		**H**	
2	**S**		**S**	**H**			**S**	**S**		**H**		**H**	
3	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	
4	**S**		**S**	**H**	**H**		**S**	**H**		**H**		**H**	
5	**H**		**H**	**H**	**S**		**H**	**S**		**H**		**H**	

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	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	75.5	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	75.5	2.0	2.8	100.0	3.0	3.0	2.9
CO3	100.0	3.0	91.8	3.0	100.0	3.0			100.0	3.0	75.5	2.0	2.8	100.0	3.0	3.0	2.9
CO4			91.8	3.0	100.0	3.0			100.0	3.0	75.5	2.0	2.8	100.0	3.0	3.0	2.9
CO5			91.8	3.0	100.0	3.0			100.0	3.0	75.5	2.0	2.8	100.0	3.0	3.0	2.9

AVERAGE	AVERAGE
3	2.908

Activate Windows

OUTCOME	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H 2.92		H 2.92	H 2.92				H 2.92
CO2				H 2.9				
CO3	H 2.92		H 2.92	H 2.92			H 2.92	
CO4				H 2.9	H 2.9			H 2.9
CO5	H 2.9		H 2.9	H 2.9				
AVERAGE OF COS FOR POS	2.913333333		2.913333333	2.908	2.9		2.92	2.91
AVERAGE OF POS	2.911111		2.911111	2.9056	2.9		2.92	2.905
AVERAGE	2.908803704							

Activate Wi

Table 3: PROGRAMME OUTCOME MAPPING

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 CYBER SECURITY

Programme Outcomes – (B. Sc.)

B. Sc.:

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

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- **PO4:** Modern tool usage: Create, select and apply appropriate techniques, resources, and modern technology and IT tools to complex science and technological activities.
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- **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:** 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
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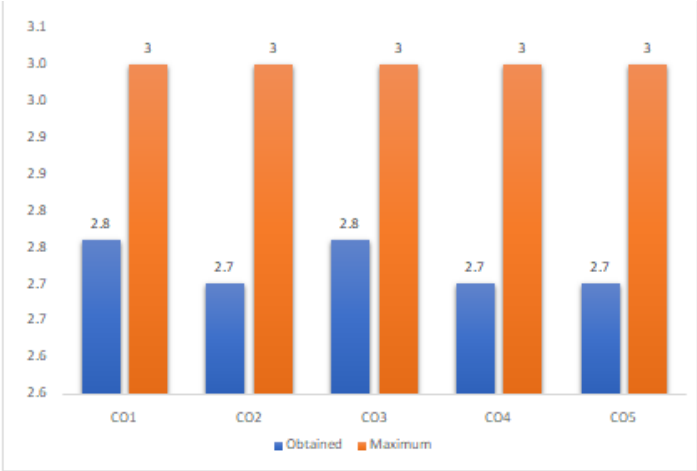
Pass percent of less than 65%= 0



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	50.0	0.0	2.4	100.0	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	50.0	0.0	2.3	100.0	3.0	3.0	2.7
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.4	100.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.3	100.0	3.0	3.0	2.7
CO5			100.0	3.0	100.0	3.0			100.0	3.0	50.0	0.0	2.3	100.0	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

Activate Windows
Go to Settings to activate Win

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	
CO5	H 2.7		H 2.7	H 2.7				H 2.7
AVERAGE OF COS FOR POS	2.73		2.724	2.715	2.76		2.72	2.7
AVERAGE OF POS	2.7225		2.7168	2.715	2.76		2.72	2.7
AVERAGE	2.722383333							

Activate Windows
Go to Settings to activa

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: COMPUTER FUNDAMENTALS

COURSE CODE: CSCS21 101

CREDITS: 3

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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

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

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1	CO1: Understand various I/O devices and functionality of computer	II (UNDERSTAND)
CO2	CO2: Solve arithmetic operations using different types of number systems	III (APPLY)

CO3	CO3: Understand the concepts of Data Organisation	II (UNDERSTAND)
CO4	CO4: Understand the concepts of Internet	II (UNDERSTAND)
CO5	CO5: Explain the concepts of Problem Solving using Computers	V(EVALUATE)

Table 1: CO, PO, PSO MAPPING

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

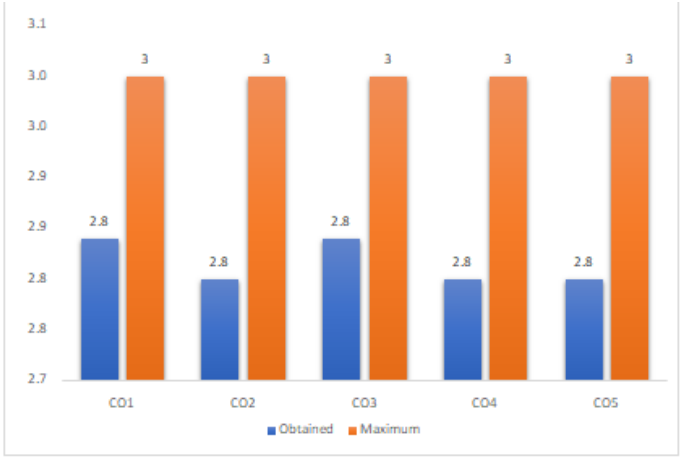
5	**H**	**S**	**H**	**H**	**S**	**S**	**H**	**S**	**S**	**H**	**H**	**H**	

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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



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

Activate Windows

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							

Activate Windows

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: Mathematical Foundation for Cyber Security

COURSE CODE: CSCS21102

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

- **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:**Construct simple mathematical proofs and possess the ability to verify them.	III (APPLY)
CO2	**CO2:**Apply basic counting techniques to solve combinatorial problems.	III (APPLY)
CO3	**CO3:**Solve problems using recurrence relations and recursion to analyse algorithms and programs such as finding fibonacci numbers andTowerof Hanoi problems.	III (APPLY)
CO4	**CO4:**Understandtofindtherankofamatrixandtosolvesystemsoflinearequationsapplyingmatrixtechniques.	V(EVALUATE)
CO5	**CO5:**Determine Eigenvalues And Eigenvectors of a given matrix and to apply these concepts to quadratic forms.	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**	

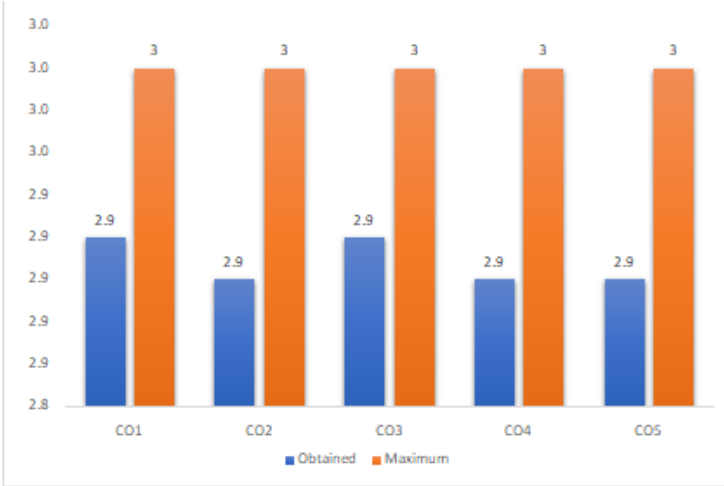
2	**S**	**S**	**S**	**S**	**S**		**S**	**S**	**H**	**H**	**S**	**H**	
3	**S**	**S**	**H**	**H**	**H**	**S**	**S**	**H**	**H**	**H**	**S**	**S**	
4	**H**	**H**	**H**	**H**	**S**			**S**	**H**	**H**	**S**	**S**	
5	**H**	**S**	**H**	**H**	**S**			**H**	**H**	**H**	**S**	**H**	

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	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	80.0	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	80.0	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	80.0	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	80.0	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	80.0	2.0	2.8	100.0	3.0	3.0	2.9

AVERAGE	AVERAGE
3	2.908

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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								
CO3			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				H 2.9
AVERAGE OF COS FOR POS	2.906666667	2.9	2.91	2.906666667	2.92		2.92	2.91
AVERAGE OF POS	2.902222	2.9	2.9075	2.906667	2.92		2.92	2.91
AVERAGE	2.909484127							

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COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: IT HARDWARE AND NETWORKING
COURSE CODE: CSCS21103 **CREDITS: 4**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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** Motherboard and its components.	IV(ANALYZE)
CO2	CO2:**Explain The** working of Hardware devices	V(EVALUATE)
CO3	CO3: **Understand** about computer networks	II(UNDERSTAND)
CO4	CO4: **Exploring** different networking devices	IV(ANALYZE))
CO5	CO5: **Exploring** Ubuntu Operating System	IV(ANALYZE)

Table 1: CO, PO, PSO MAPPING

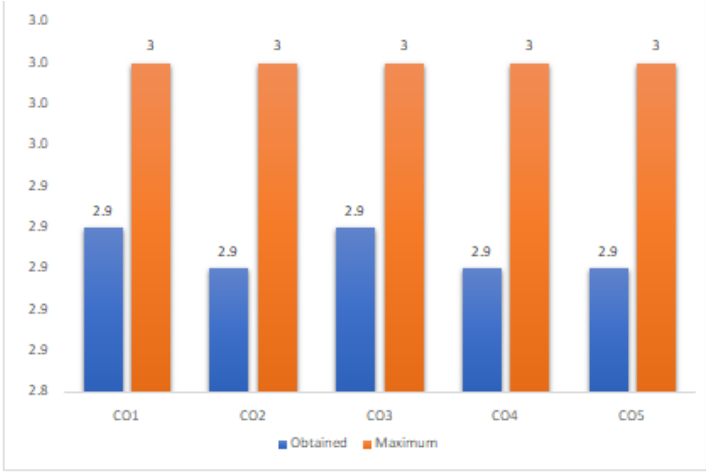
Course outcomes	Programme Outcomes								Program Specific outcomes				
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	S	H	H	H			S	H	H	H	H	H	
2	H	S	H	H	H		H	H	H	H	H	H	
3	H	S	S	H	S	S	H	H	H	H	H	H	
4	H	S	H	H	S	S	H	H	H	H	H	H	
5	H	S	H	H	S	S	H	S	H	H	S	S	

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

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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							

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COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PROBLEM SOLVING AND PROGRAMMING IN C

COURSE CODE: BS21104

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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**: **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**	

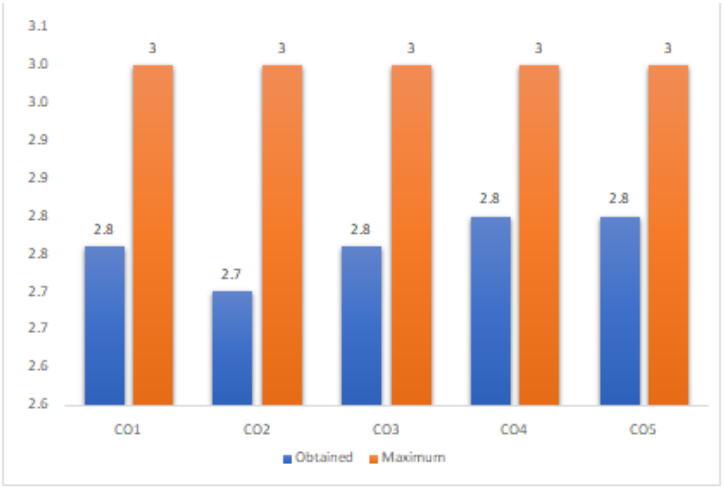
2	**H**		**H**	**H**			**H**	**H**	**H**	**H**		**H**	
3	**H**		**S**	**H**	**S**		**H**	**H**	**H**	**H**		**H**	
4	**H**		**H**	**H**	**H**		**S**	**H**	**H**	**H**		**H**	
5	**H**		**H**	**H**	**H**		**H**	**S**	**H**	**H**		**H**	

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	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

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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							

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COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE:GENERAL ENGLISH -II **COURSE CODE: ES18201** **CREDITS: 3**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY
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			

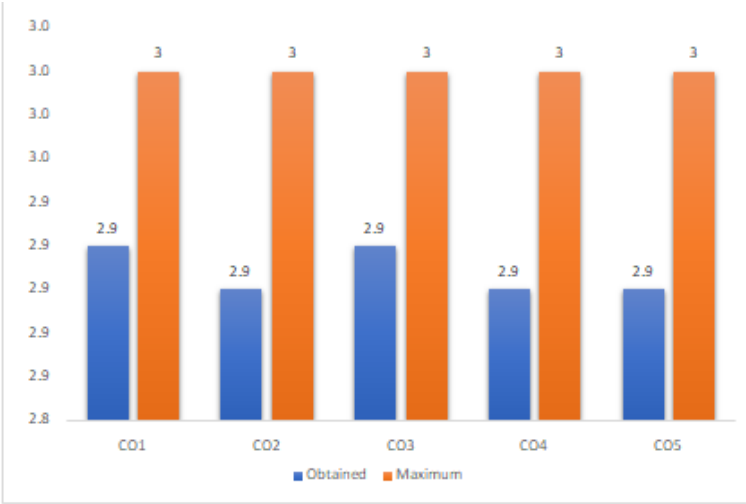
H: Highly Supportive **S: Supportive**

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	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

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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							

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COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: INDIAN HERITAGE AND CULTURE

COURSE CODE: IC19201

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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 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** : 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

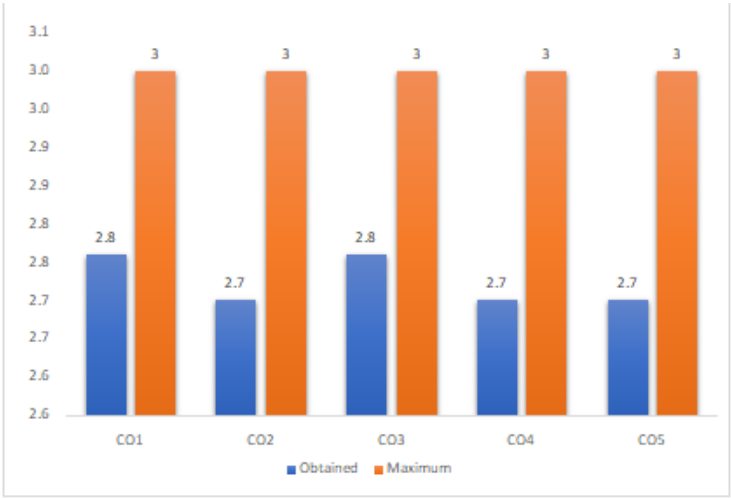
outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P08	PSO1	PSO2	PSO3	PSO4	
1	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
2	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
3	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
4	**S**	**H**	**H**		**S**		**S**	**S**	**S**				
5	**S**	**H**	**H**		**S**		**S**	**S**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

H: Highly Supportive **S: Supportive**

Table 2: COURSE OUTCOME ATTAINMENT

ATTAINMENT SCALE:

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	62.0	0.0	2.4	98.0	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	62.0	0.0	2.3	98.0	3.0	3.0	2.7
CO3	100.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	62.0	0.0	2.4	98.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	62.0	0.0	2.3	98.0	3.0	3.0	2.7
CO5			100.0	3.0	100.0	3.0			100.0	3.0	62.0	0.0	2.3	98.0	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

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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					
CO3		H 2.76	H 2.76					
CO4		H 2.7	H 2.7					
CO5		H 2.7	H 2.7					
AVERAGE OF COS FOR POS		2.724	2.724					
AVERAGE OF POS		2.7168	2.7168					
AVERAGE	2.7168							

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COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: COMPUTER NETWORKS

COURSE CODE: CSCS21201

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

Programme Outcomes – (B. Sc.)

B. Sc.:

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

environmental contexts and for sustainable development.

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

PROGRAMME SPECIFIC OUTCOMES (DEPARTMENTAL):

Students will be able to:

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

	COURSE OUTCOMES	**BLOOM'S TAXONOMY LEVEL**
CO1	CO1: **Identify** basic computer network topologies and protocols and explain Data Communication System components	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**	

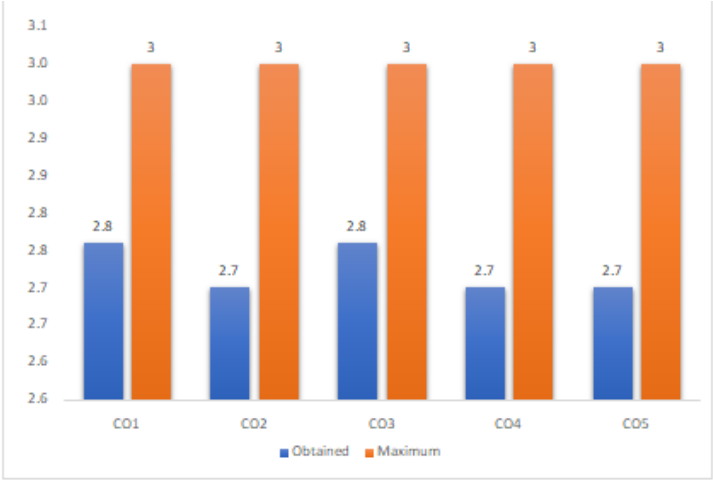
4	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**S**	
5	**H**	**H**	**H**	**H**	**H**	**S**	**H**	**H**	**S**	**H**	**H**	**H**	

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
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

Activate Windows
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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							

Activate Windows

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: ELEMENTARY NUMBER THEORY AND LAPLACE TRNASFORMS

COURSE CODE: CSCS21202

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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: 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**	

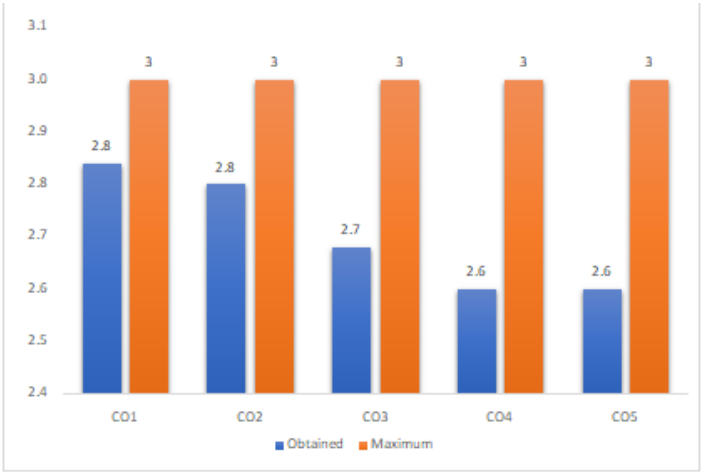
2	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**S**	
3	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**H**	
4	**H**	**S**	**H**	**H**	**S**		**S**	**S**	**H**	**H**		**S**	
5	**H**	**S**	**H**	**H**	**S**		**S**	**H**	**H**	**H**		**H**	

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	90.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	68.0	1.0	2.6	92.0	3.0	3.0	2.8
CO2	90.0	3.0			100.0	3.0			100.0	3.0	68.0	1.0	2.5	92.0	3.0	3.0	2.8
CO3	90.0	3.0	74.0	1.0	100.0	3.0			100.0	3.0	68.0	1.0	2.2	92.0	3.0	3.0	2.7
CO4			74.0	1.0	100.0	3.0			100.0	3.0	68.0	1.0	2.0	92.0	3.0	3.0	2.6
CO5			74.0	1.0	100.0	3.0			100.0	3.0	68.0	1.0	2.0	92.0	3.0	3.0	2.6

AVERAGE	AVERAGE
3	2.704

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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	H 2.8		H 2.8	H 2.8	H 2.8		H 2.8	
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	2.704		2.704	2.67	2.773333333		2.693333333	2.6
AVERAGE OF POS	2.6768		2.6768	2.67	2.751111		2.693333	2.6
AVERAGE	2.678007407							

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COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: PRINCIPLES OF INFORMATION SECURITY **COURSE CODE:CSCS21203** **CREDITS: 4**
DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY
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 organisation	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

ATTAINMENT SCALE:

Pass percent of 85% and above= 3
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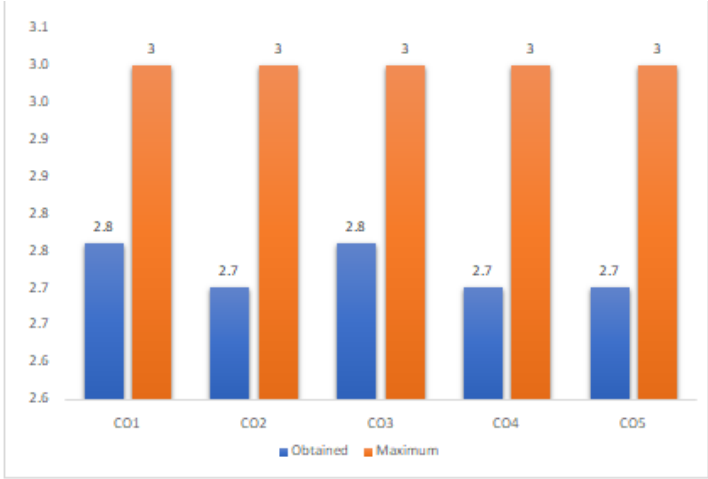
Pass percent of less than 65%= 0



co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	100.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	48.0	0.0	2.4	96.0	3.0	3.0	2.8
CO2	100.0	3.0			100.0	3.0			100.0	3.0	48.0	0.0	2.3	96.0	3.0	3.0	2.7
CO3	100.0	3.0	90.0	3.0	100.0	3.0			100.0	3.0	48.0	0.0	2.4	96.0	3.0	3.0	2.8
CO4			90.0	3.0	100.0	3.0			100.0	3.0	48.0	0.0	2.3	96.0	3.0	3.0	2.7
CO5			90.0	3.0	100.0	3.0			100.0	3.0	48.0	0.0	2.3	96.0	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

Activate Windows
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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
CO2	H 2.7	H 2.7	H 2.7	H 2.7	H 2.7			H 2.7
CO3	H 2.76	H 2.76	H 2.76	H 2.76	H 2.76			H 2.76
CO4	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
AVERAGE OF COS FOR POS	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
AVERAGE	2.7168							

Activate Windows

COURSE OUTCOME MAPPING

MAPPING COURSE OUTCOMES LEADING TO THE ATTAINMENT OF PROGRAM OUTCOMES

COURSE TITLE: C++ and DATA STRUCTURES

COURSE CODE: BS21204

CREDITS: 4

DEPARTMENT: B. Sc. COMPUTER SCIENCE AND CYBER SECURITY

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.
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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: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

ATTAINMENT SCALE:

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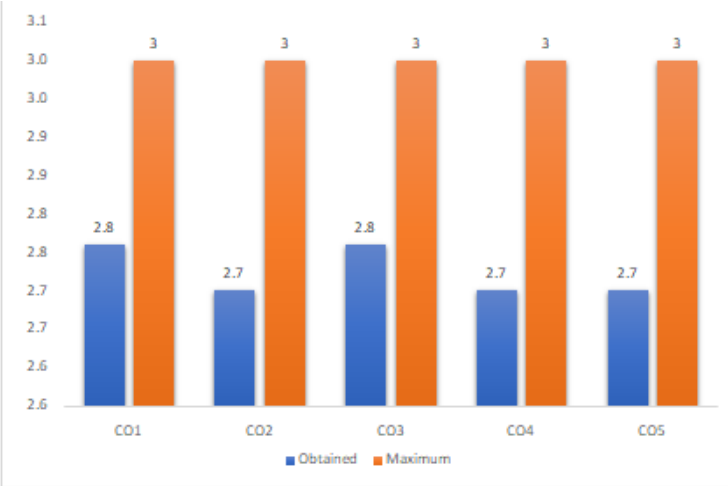

co	mid exam 1		mid exam 2		group discussion		assignment		viva		Attendence			External Exam			
	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	pass%	Attainment level	co wise internal average	pass%	Attainment level	co wise external average	co wise total average
CO1	94.0	3.0			100.0	3.0	100.0	3.0	100.0	3.0	58.0	0.0	2.4	96.0	3.0	3.0	2.8
CO2	94.0	3.0			100.0	3.0			100.0	3.0	58.0	0.0	2.3	96.0	3.0	3.0	2.7
CO3	94.0	3.0	100.0	3.0	100.0	3.0			100.0	3.0	58.0	0.0	2.4	96.0	3.0	3.0	2.8
CO4			100.0	3.0	100.0	3.0			100.0	3.0	58.0	0.0	2.3	96.0	3.0	3.0	2.7
CO5			100.0	3.0	100.0	3.0			100.0	3.0	58.0	0.0	2.3	96.0	3.0	3.0	2.7

AVERAGE	AVERAGE
3	2.724

Activate Windows
Go to Settings to activat

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							

Activate Wi