Guru Gobind Singh Foundation's

Guru Gobind Singh College of Engineering and Research Centre, Nashik

Vision and Mission of the Institute

Vision

An institute striving for excellence in providing transformative academic education and stimulating environment for research to enhance skills for developing intellectuals and to inculcate quality education with social and technical knowledge which will benefit the society and industrial challenges.

Mission

- To be a technical educational Institute in transforming aspiring engineers through rigorous course work and technical skills .
- To benchmark with the best global standards of quality education
- To enhance commitment of the faculty, staff and students by inculcating the spirit of inquiry, team work and professionalism
- Establish a centre of excellence to enhance academia-industry partnership, work on collaborative projects, and develop new products, services and patents.
- To develop globally competent students by enhancing indigenous technologies and inculcate entrepreneurship in them.

Core Value

- Student centric learning
- Professional development
- Integrity and ethics
- Innovation and flexibility
- Team work and collaboration

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To be a center of excellence in computer engineering for developing software professionals, researchers and entrepreneurs benefitting industry and society.

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Statements of Program Outcomes

Engineering Graduates will be able to:

1.Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2.Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3.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.

4.Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5.Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

6.The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7.Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8.Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

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10.Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11.Project management and finance: Demonstrate knowledge and understanding of

the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12.Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSO)

PSO1: Professional Skills-The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexities.

PSO2: Problem-Solving Skills- The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

PSO3: Successful Career and Entrepreneurship- The ability to employ modern computer languages, environments and platforms in creating innovative career paths to be an entrepreneur and to have a zest for higher studies.

Guru Gobind Singh College of Engineering & Research Centre, Nashik

Computer Engineering [2023-24]

Course Outcome

Year : SECOND YEAR - SEM-3 SECO-B
Subject : 210245-Digital Electronics and Logic Design(Theory | Regular)
Course Code : 210245_Th

Sr. No.	CO Id	Course Outcome
1	CO1	Simplify Boolean Expressions using K Map.
2	CO2	Design and implement combinational circuits.
3	CO3	Design and implement sequential circuits.
4	CO4	Develop simple real-world application using ASM and PLD.
5	CO5	Choose appropriate logic families IC packages as per the given design specifications.
6	CO6	Explain organization and architecture of computer system

Guru Gobind Singh College of Engineering & Research Centre, Nashik

Computer Engineering [2023-24]

CO PO Desired Mapping Report

Year : SECOND YEAR - SEM-3 SECO-B
Subject : 210245-Digital Electronics and Logic Design - Theory
Faculty : Swati Khokale
Course Code : 210245_Th

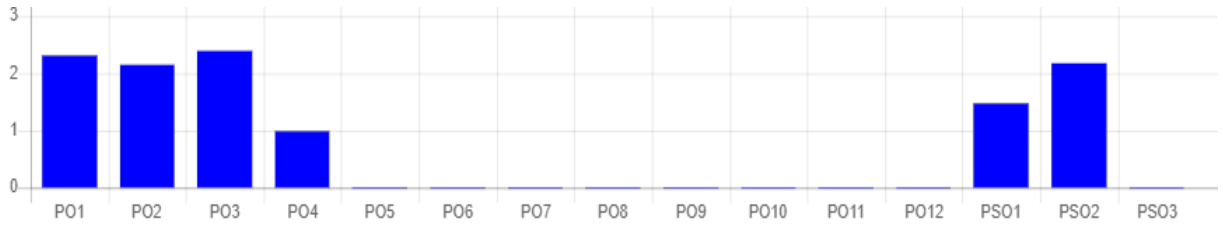
Course Outcome Details

#	Course Outcome	Description
1	CO1	Simplify Boolean Expressions using K Map.
2	CO2	Design and implement combinational circuits.
3	CO3	Design and implement sequential circuits.
4	CO4	Develop simple real-world application using ASM and PLD.
5	CO5	Choose appropriate logic families IC packages as per the given design specifications.
6	CO6	Explain organization and architecture of computer system

Desired Attainment Details

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3											2	
CO2	3	3	3	1									1		
CO3	3	3	3	1									2	2	
CO4	1	1	1	1									1	3	
CO5	2	2												3	
CO6	2	2	2										2	1	
Average	2.33	2.17	2.40	1.00									1.50	2.20	

Desired Attainment Average : 1.93



Guru Gobind Singh College of Engineering & Research Centre, Nashik

Computer Engineering [2023-24]

Justification Report for CO-PO/PSO Desired Mapping

Year : SECOND YEAR - SEM-3 SECO-B
Subject : 210245-Digital Electronics and Logic Design - Theory
Faculty : Swati Khokale
Course Code : 210245_Th

Justification

Course Outcome	Program Outcome	Level	Justification
CO1	PO1	3	students able to understand basics of digital electronics
CO1	PO2	2	students able to understand Boolean algebra, including the basic theorems and laws.
CO1	PO3	3	students able to Analyze and design combinational circuits using logic gates and related components.
CO1	PSO2	2	Students will able to simplify Boolean Expression using K Map
CO2	PO1	3	students able to Perform binary arithmetic operations, including addition, subtraction, multiplication, and division.
CO2	PO2	3	Design and analyze multiplexers and demultiplexers for various applications.
CO2	PO3	3	Analyze and design combinational circuits using logic gates and related components.
CO2	PO4	1	students ale to understand digital electronics and their applications
CO2	PSO1	1	Students will able to design and implement combinational circuits

Course Outcome	Program Outcome	Level	Justification
CO3	PO1	3	students able to understand digital electronics in accordance with safety standards and ethical considerations.
CO3	PO2	3	students able to Analyze and design shift registers and counters for specific applications.
CO3	PO3	3	Understand the interface between digital electronics and microprocessors and apply this knowledge in practical applications.
CO3	PO4	1	Students apply digital logic concepts in real-world applications such as digital displays, control systems, and communication systems.
CO3	PSO1	2	Students will able to design and implement sequential circuits like synchronous and aynchronous counter
CO3	PSO2	2	Students will able to apply standard practices to design and implement sequential circuits
CO4	PO1	1	Students will able to design and implement combinational circuits
CO4	PO2	1	Document design choices made during digital circuit design, providing clear explanations for decisions.
CO4	PO3	1	Collaborate with peers to design and implement digital systems, fostering effective teamwork.
CO4	PO4	1	Develop skills to troubleshoot and debug digital circuits effectively.
CO4	PSO1	1	Students will able to develop Real world application using ASM and PLD
CO4	PSO2	3	Students will able to apply standard practices for development of real world application using ASM and PLD
CO5	PO1	2	Design and implement sequential circuits, including flip-flops, registers, and counters.
CO5	PO2	2	students able to understand the operation of different types of memory devices, such as RAM and ROM.

Course Outcome	Program Outcome	Level	Justification
CO5	PSO2	3	Students will able to apply standard practices for differentiate and choose appropriate logic families IC Packages as per the given design specification
CO6	PO1	2	Understand the architecture and programming of programmable logic devices, such as PALs and FPGAs.
CO6	PO2	2	Differentiate between synchronous and asynchronous sequential circuits and design circuits accordingly.
CO6	PO3	2	Understand the architecture and programming of programmable logic devices, such as PALs and FPGAs.
CO6	PSO1	2	Students will able to elaborate organization and architecture of computer system
CO6	PSO2	1	Students will able to apply standard practices to elaborate organization and architecture of computer system

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Guru Gobind Singh College of Engineering & Research Centre, Nashik

Computer Engineering [2023-24]

Course Outcome

Year : THIRD YEAR - Sem-5 TECO-A
Subject : 310242 Theory of Computation(Theory | Regular)
Course Code : 310242_Th

Sr. No.	CO Id	Course Outcome
1	CO1	CO1: Understand formal language, translation logic, essentials of translation, alphabets, languagerepresentation and apply it to design Finite Automata and its variants
2	CO2	CO2: Construct regular expression to present regular language and understand pumping lemma forRE
3	CO3	CO3: Design Context Free Grammars and learn to simplify the grammar
4	CO4	CO4: Construct Pushdown Automaton model for the Context Free Language
5	CO5	CO5: Devise Turing Machine for the different requirements outlined by theoretical computerscience
6	CO6	CO6: Analyze different classes of problems, and study concepts of NP completeness

Guru Gobind Singh College of Engineering & Research Centre, Nashik

Computer Engineering [2023-24]

CO PO Desired Mapping Report

Year : THIRD YEAR - Sem-5 TECO-A
Subject : 310242 Theory of Computation - Theory
Faculty : Akshay Jain
Course Code : 310242_Th

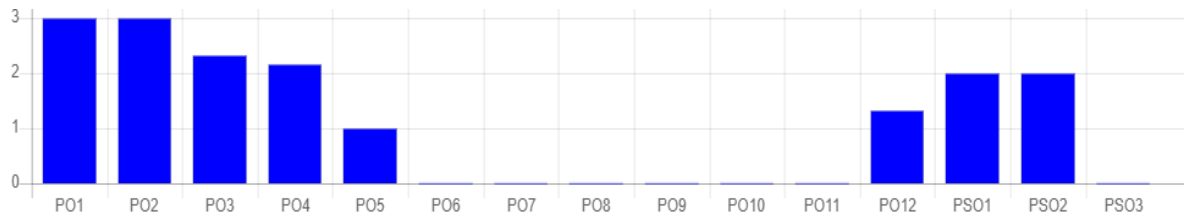
Course Outcome Details

#	Course Outcome	Description
1	CO1	CO1: Understand formal language, translation logic, essentials of translation, alphabets, languagerepresentation and apply it to design Finite Automata and its variants
2	CO2	CO2: Construct regular expression to present regular language and understand pumping lemma forRE
3	CO3	CO3: Design Context Free Grammars and learn to simplify the grammar
4	CO4	CO4: Construct Pushdown Automaton model for the Context Free Language
5	CO5	CO5: Devise Turing Machine for the different requirements outlined by theoretical computerscience
6	CO6	CO6: Analyze different classes of problems, and study concepts of NP completeness

Desired Attainment Details

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	1							2	2		
CO2	3	3	2	2	1							1	2		
CO3	3	3	2	2	1							1	2		
CO4	3	3	2	2	1							1	2		
CO5	3	3	3	2	1							2	2		
CO6	3	3	3	3	1							1		2	
Average	3.00	3.00	2.33	2.17	1.00							1.33	2.00	2.00	

Desired Attainment Average : 2.10



Guru Gobind Singh College of Engineering & Research Centre, Nashik

Computer Engineering [2023-24]

CO PO Desired Mapping Report with Justification

Justification

Course Outcome	Program Outcome	Level	Justification
CO1	PO1	3	indicating a significant emphasis on applying engineering knowledge to solve complex problems.
CO1	PO2	3	suggesting a focus on problem analysis using mathematical and engineering principles.
CO1	PO3	2	indicating an emphasis on design solutions with considerations for health and safety.
CO1	PO4	2	suggesting an application of research-based knowledge but not to the highest extent.
CO1	PO5	1	indicating a limited emphasis on modern tool usage.
CO1	PO12	2	suggesting some focus on project management principles.
CO1	PSO1	2	This CO aligns with PSO1 (Professional Skills) as it focuses on developing the ability to understand and analyze formal languages, translation logic, and language representation.
CO2	PO1	3	indicating a significant emphasis on applying engineering knowledge.
CO2	PO2	3	suggesting a focus on problem analysis.
CO2	PO3	2	indicating an emphasis on design solutions.
CO2	PO4	2	suggesting an application of research-based knowledge but not to the highest extent.
CO2	PO5	1	indicating a limited emphasis on modern tool usage.
CO2	PO12	1	suggesting limited focus on project management principles.
CO2	PSO1	2	This CO aligns with PSO1 (Professional Skills) as it involves constructing regular expressions and understanding the pumping lemma. These skills are important for problem-solving and system development using open-ended programming environments.
CO3	PO1	3	indicating a significant emphasis on applying engineering knowledge.
CO3	PO2	3	suggesting a focus on problem analysis.
CO3	PO3	2	indicating an emphasis on design solutions.
CO3	PO4	2	suggesting an application of research-based knowledge but not to the highest extent.
CO3	PO5	1	indicating a limited emphasis on modern tool usage.
CO3	PO12	1	suggesting limited focus on project management principles.
CO3	PSO1	2	This CO aligns with PSO1 (Professional Skills) as it emphasizes designing Context-Free Grammars and simplifying grammars.

Course Outcome	Program Outcome	Level	Justification
CO4	PO1	3	indicating a significant emphasis on applying engineering knowledge.
CO4	PO2	3	suggesting a focus on problem analysis.
CO4	PO3	2	indicating an emphasis on design solutions.
CO4	PO4	2	suggesting an application of research-based knowledge but not to the highest extent.
CO4	PO5	1	indicating a limited emphasis on modern tool usage.
CO4	PO12	1	suggesting limited focus on project management principles.
CO4	PSO1	2	This CO aligns with PSO1 (Professional Skills) as it requires constructing Pushdown Automaton models. These skills are crucial for understanding and implementing computational models to solve complex problems.
CO5	PO1	3	indicating a significant emphasis on applying engineering knowledge.
CO5	PO2	3	suggesting a focus on problem analysis.
CO5	PO3	3	indicating a strong emphasis on design solutions with considerations for health and safety.
CO5	PO4	2	suggesting an application of research-based knowledge but not to the highest extent.
CO5	PO5	1	indicating a limited emphasis on modern tool usage.
CO5	PO12	2	suggesting some focus on project management principles.
CO5	PSO1	2	This skill is applicable to theoretical computer science and various domains such as algorithms, system software, multimedia, web design, big data analytics, and networking.
CO6	PO1	3	indicating a significant emphasis on applying engineering knowledge.
CO6	PO2	3	suggesting a focus on problem analysis.
CO6	PO3	3	indicating a strong emphasis on design solutions with considerations for health and safety.
CO6	PO4	3	suggesting a significant application of research-based knowledge.
CO6	PO5	1	indicating a limited emphasis on modern tool usage.
CO6	PO12	1	suggesting limited focus on project management principles.
CO6	PSO2	2	Analyzing different classes of problems and studying concepts of NP completeness require applying standard practices, strategies, and analytical thinking in software project development.

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Guru Gobind Singh College of Engineering & Research Centre, Nashik

Computer Engineering [2023-24]

Course Outcome

Year : FINAL YEAR - Sem-7 BECO-A
Subject : 410241 Design and Analysis of Algorithms(Theory | Regular)
Course Code : 410241

Sr. No.	CO Id	Course Outcome
1	CO1	Formulate the problem
2	CO2	Analyze the asymptotic performance of algorithms
3	CO3	Decide and apply algorithmic strategies to solve given problem.
4	CO4	Find optimal solution by applying various methods.
5	CO5	Analyze and apply scheduling and sorting algorithms.
6	CO6	Solve problems for multi-core or distributed or concurrent environments.

Guru Gobind Singh College of Engineering & Research Centre, Nashik

Computer Engineering [2023-24]

CO PO Desired Mapping Report

Year : FINAL YEAR - Sem-7 BECO-A
Subject : 410241 Design and Analysis of Algorithms - Theory
Faculty : Sweety Jachak
Course Code : 410241

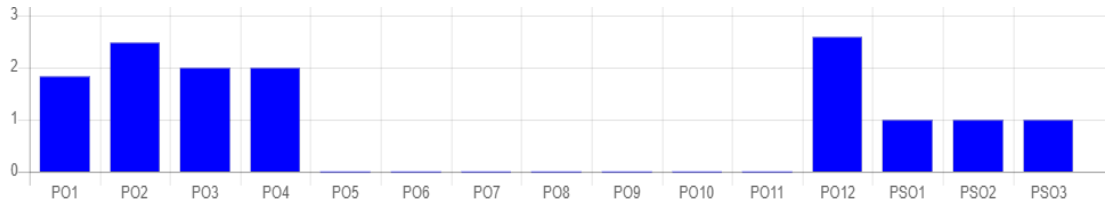
Course Outcome Details

#	Course Outcome	Description
1	CO1	Formulate the problem
2	CO2	Analyze the asymptotic performance of algorithms
3	CO3	Decide and apply algorithmic strategies to solve given problem.
4	CO4	Find optimal solution by applying various methods.
5	CO5	Analyze and apply scheduling and sorting algorithms.
6	CO6	Solve problems for multi-core or distributed or concurrent environments.

Desired Attainment Details

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2										2	1		
CO2	2	3										2	1		
CO3	2	3	2									3	1		1
CO4	2	3	3	2								3	1	1	
CO5	2	2	2	2								3	1	1	
CO6	2	2	1	2									1		1
Average	1.83	2.50	2.00	2.00								2.60	1.00	1.00	1.00

Desired Attainment Average : 1.74



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Justification Report for CO-PO/PSO Desired Mapping

Year : FINAL YEAR - Sem-7 BECO-A
Subject : 410241 Design and Analysis of Algorithms - Theory
Faculty : Sweety Jachak
Course Code : 410241

Justification

Course Outcome	Program Outcome	Level	Justification
CO1	PO1	1	According to CO1 it needs to Formulate the problem. So it is slightly correlated with PO 1
CO1	PO2	2	According to CO1 it needs to Formulate the problem. So it is moderately correlated with PO 2
CO1	PO12	2	According to CO1 it needs to Formulate the problem. So it is moderately correlated with PO 12
CO1	PSO1	1	According to CO1 it needs to Formulate the problem. So it is slightly correlated with PSO 1
CO2	PO1	2	According to CO2 it needs to Analyze the asymptotic performance of algorithms. So it is moderately correlated with PO 1
CO2	PO2	3	According to CO2 it needs to Analyze the asymptotic performance of algorithms. So it is strongly correlated with PO 2
CO2	PO12	2	According to CO2 it needs to Analyze the asymptotic performance of algorithms. So it is moderately correlated with PO 12
CO2	PSO1	1	According to CO2 it needs to Analyze the asymptotic performance of algorithms. So it is slightly correlated with PSO 1
CO3	PO1	2	According to CO3 it needs to Decide and apply algorithmic strategies to solve given problem. So it is moderately correlated with PO 1
CO3	PO2	3	According to CO3 it needs to Decide and apply algorithmic strategies to solve given problem. So it is strongly correlated with PO 2
CO3	PO3	2	According to CO3 it needs to Decide and apply algorithmic strategies to solve given problem. So it is moderately correlated with PO 3
CO3	PO12	3	According to CO3 it needs to Decide and apply algorithmic strategies to solve given problem. So it is strongly correlated with PO 12
CO3	PSO1	1	According to CO3 it needs to Decide and apply algorithmic strategies to solve given problem. So it is strongly correlated with PSO 1
CO3	PSO3	1	According to CO3 it needs to Decide and apply algorithmic strategies to solve given problem. So it is slightly correlated with PSO 3
CO4	PO1	2	According to CO4 it needs to Find optimal solution by applying various methods. So it is moderately correlated with PO 1
CO4	PO2	3	According to CO4 it needs to Find optimal solution by applying various methods. So it is strongly correlated with PO 2
CO4	PO3	3	According to CO4 it needs to Find optimal solution by applying various methods. So it is strongly correlated with PO 3
CO4	PO4	2	According to CO4 it needs to Find optimal solution by applying various methods. So it is moderately correlated with PO 4
CO4	PO12	3	According to CO4 it needs to Find optimal solution by applying various methods. So it is strongly correlated with PO 12
CO4	PSO1	1	According to CO4 it needs to Find optimal solution by applying various methods. So it is slightly correlated with PSO 1

Course Outcome	Program Outcome	Level	Justification
CO4	PSO2	1	According to CO4 it needs to Find optimal solution by applying various methods. So it is slightly correlated with PSO 2
CO5	PO1	2	According to CO5 it needs to Analyze and Apply Scheduling and Sorting Algorithms. So it is moderately correlated with PO 1
CO5	PO2	2	According to CO5 it needs to Analyze and Apply Scheduling and Sorting Algorithms. So it is moderately correlated with PO 2
CO5	PO3	2	According to CO5 it needs to Analyze and Apply Scheduling and Sorting Algorithms. So it is moderately correlated with PO 3
CO5	PO4	2	According to CO5 it needs to Analyze and Apply Scheduling and Sorting Algorithms. So it is moderately correlated with PO 4
CO5	PO12	3	According to CO5 it needs to Analyze and Apply Scheduling and Sorting Algorithms. So it is strongly correlated with PO 12
CO5	PSO1	1	According to CO5 it needs to Analyze and Apply Scheduling and Sorting Algorithms. So it is slightly correlated with PSO 1
CO5	PSO2	1	According to CO5 it needs to Analyze and Apply Scheduling and Sorting Algorithms. So it is slightly correlated with PSO 2
CO6	PO1	2	According to CO6 it needs to Solve problems for multi-core or distributed or concurrent environments. So it is moderately correlated with PO 1
CO6	PO2	2	According to CO6 it needs to Solve problems for multi-core or distributed or concurrent environments. So it is moderately correlated with PO 2
CO6	PO3	1	According to CO6 it needs to Solve problems for multi-core or distributed or concurrent environments. So it is slightly correlated with PO 3
CO6	PO4	2	According to CO6 it needs to Solve problems for multi-core or distributed or concurrent environments. So it is moderately correlated with PO 4
CO6	PSO1	1	According to CO6 it needs to Solve problems for multi-core or distributed or concurrent environments. So it is slightly correlated with PSO 1
CO6	PSO3	1	According to CO6 it needs to Solve problems for multi-core or distributed or concurrent environments. So it is slightly correlated with PSO 3