COURSE OUTCOME & PROGRAM OUTCOME MAPPING PROCEDURE & TERMINOLOG

BLOOM'S TAXONOMY

1. Outcome-Based Education (OBE)

Outcome-based education is an educational model in which curriculum and pedagogy and assessment are all focused on student learning. Simply put, OBE emphasizes student learning and success.

What is Bloom's Taxonomy?

In 1956, **Benjamin Bloom,** American educational psychologist, led a group of educational psychologists to develop a taxonomy, or classification system, for learning. He proposed that learning fits into one of three psychological domains:

1. the **Cognitive** domain – processing information, knowledge and mental skills
2. the **Affective** domain – Attitudes and feelings
3. the **Psychomotor** domain – manipulative, manual or physical skills

Within each of these domains, he identified different levels of learning.

Cognitive Domain
Learning Outcomes Related to Knowledge

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Cite	Convert	Apply	Analyze	Assemble	Access
Label	Define	Chart	Compare	Create	Appraise
List	Describe	Compute	Contrast	Construct	Conclude
Enumerate	Discuss	Demonstrate	Correlate	Design	Critique
Identify	Estimate	Determine	Diagram	Develop	Decide
Imitate	Explain	Dramatize	Dissect	Formulate	Defend
Match	Generalize	Establish	Differentiate	Generate	Diagnose
Name	Identify	Make	Distinguish	Hypothesize	Evaluate
Recall	Locate	Prepare	Investigate	Invent	Justify
Reproduce	Paraphrase	Project	Limit	Modify	Rank
State	Restate	Solve	Outline	Reframe	Recommend
Write	Summarize	Use	Separate	Synthesize	Support

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Psychomotor Domain
Learning Outcomes Related to Skills

Observe	Model	Recognize Standards	Correct	Apply	Coach
Hear	Attempt	Check	Adapt	Build	Demonstrate
Identify	Copy	Detect	Adjust	Compose	Exhibit
Observe	Follow	Discriminate	Alter	Construct	Illustrate
See	Imitate	Differentiate	Change	Create	Instruct
Smell	Mimic	Distinguish	Correct	Design	Teach
Taste	Model	Notice	Customize	Originate	Train
Touch	Reenact	Perceive	Develop	Produce	
Watch	Repeat	Recognize	Improve		
	Reproduce	Select	Manipulate		
	Show		Modify		
			Revise		

Affective Domain
Learning Outcomes Related to Attitudes, Behaviors & Values

Receiving	Responding	Valuing	Organizing	Characterizing
Accept	Behave	Accept	Adapt	Authenticate
Attend	Comply	Adapt	Adjust	Characterize
Describe	Cooperate	Balance	Alter	Defend
Explain	Discuss	Choose	Change	Display
Locate	Examine	Differentiate	Customize	Embody
Observe	Follow	Defend	Develop	Habituate
Realize	Model	Influence	Improve	Internalize
Receive	Present	Prefer	Manipulate	Produce
Recognize	Respond	Recognize	Modify	Represent
	Show	Seek	Practice	Validate
	Studies	Value	Revise	Verify

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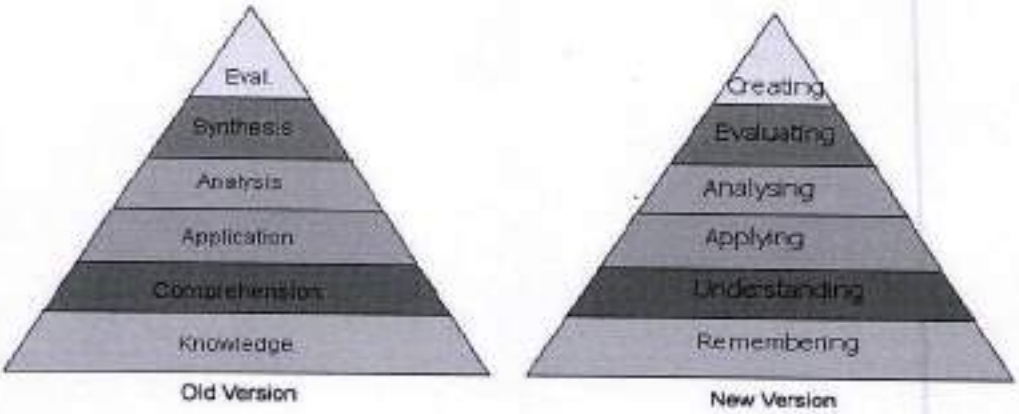

Source: http://www.odu.edu/educ/roverbau/Bloom/blooms_taxonomy.htm

Note: Adapted from Raipur Institute of Technology.

2. OBE Supports Measuring CO, PO, PSO, and PEO

1. **Course Outcomes (CO)**: Statements focusing on knowledge and skills achieved through the course.
2. **Program Outcomes (PO):** These are broader statements indicating what learners are likely to know and able to perform after graduation.
3. **Program Specific Outcomes (PSO)**: These represent what a student should be able to do during graduation with a specific program.
4. **Program Educational Objectives (PEO)**: Focus on the achievement of graduates during their careers.

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3. Program Outcomes (PO)

PO1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. 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.

PO4. 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.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. 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.

PO7. 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.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. 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.

PO11. 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.

PO12. 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.

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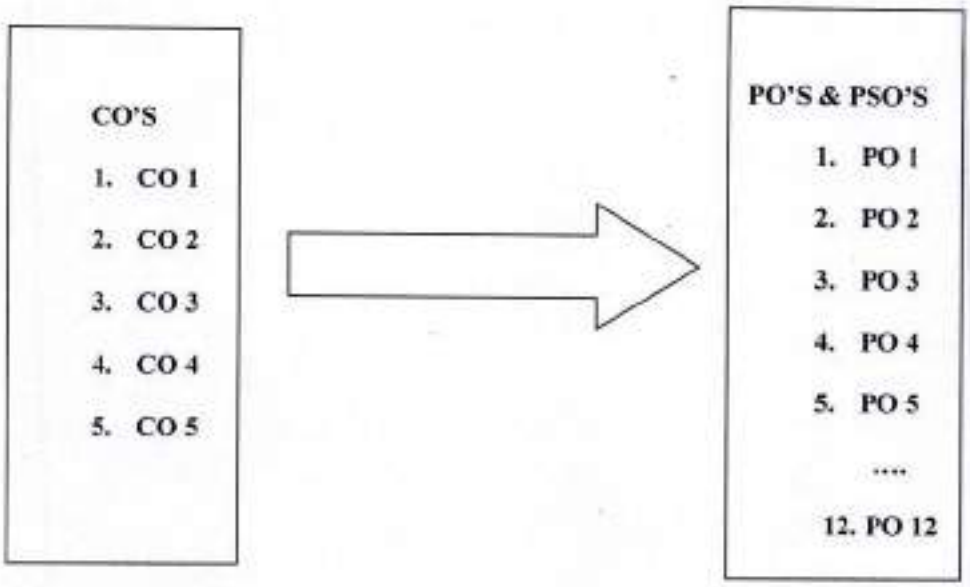
4. Relationship Between CO's, PO's & PSO's



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UG

II Year

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Department of Computer Science & Engineering

Course: B.Tech
Sem/Year: III/II

Sub: Mathmetics - III
Sub_Code: B000311(014)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Define (mathematically) unit step unit impulse, Laplace transform its properties, inverse and applications to solve ordinary differential equations.
CO2	Understand the concepts of partial differential equation, find Numerical solution of differential equations which may be arising due to mathematical modelling based on engineering problems.
CO3	Solve the random variables, probability distribution, mean, median, mode and variance and other distribution functions.
CO4	Recognize the interpolation with equal and unequal intervals.
CO5	Solve the ordinary differential equations with different methods.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3										3	
CO2	3	3	2	3										3	3
CO3	3	3	2	3										3	
CO4	3	3	2	3										3	
CO5	3	3	2	3										3	
	3.0	3	2	3										3	3

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Department of Computer Science & Engineering

Course: B.Tech **Sub:** Data Structure & Algorithms

Sem/Year: III/II **Sub_Code:** B022312(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Identify the suitable data structures and analyze the performance of algorithms
CO2	Understand the concept of single, double, and circular linked-lists.
CO3	Implemention of Stacks and Queues by using array and linked-list.
CO4	Create a programs by using trees and graphs.
CO5	Design and Implement applications of advanced data structures using Biary search tree.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2										3	3	3
CO2	3	2	2										3	3	3
CO3	3	2	2	3									3	3	3
CO4	3	3	2	3									3	3	3
CO5	3	3	3	3									3	3	3
	2.8	2.6	2.2	3									3	3	3

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Department of Computer Science & Engineering

Course: B.Tech
Sem/Year: III/II

Sub: Principles of Programming Languages
Sub_Code: B022313(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Obtain broad understanding of the role of computer science , fundamental software design concepts and notations.
CO2	Explain the various concepts of programming language paradigms, processors and software simulation types.
CO3	Understand key concepts in the implementataion of common features of programming languages.
CO4	Acquire Knowledge of basic concepts about object oriented programming language.
CO5	Program in object oriented programming language paradigm using various computational methods.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3									3	3	3
CO2	3	2	2	3									3	3	3
CO3	3	3	3	3									3	3	3
CO4	3	3	3	3									3	3	3
CO5	3	2	2	3									3	3	3
	3.0	2.4	2.4	3									3	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Digital Electronics & Logic Design

Sem/Year: III/II

Sub_Code: B022314(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the fundamental dgital concepts, number systems, binary codes, boolean algebra and functions.
CO2	Apply the design procedure to construct basic combinational circuits.
CO3	Analysis of synchronous and asynchronous sequential circuits using flip flops.
CO4	Interpretation of various types of memories with their operations.
CO5	Discuss the various programmable logic devices.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	1									2	2	2
CO2	2	1	1	1									2	2	2
CO3	1	3	3	3									3	2	2
CO4	1	1	2										2	2	2
CO5	1	1	1	1									2	2	2
	1.4	1.75	2.5	1.5									2.2	2	2

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Department of Computer Science & Engineering

Course: B.Tech
Sem/Year: III/II

Sub: Operating Systems
Sub_Code: B022315(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Explain the structure and functions of Operating system.
CO2	Illustrate the concept of concurrency.
CO3	Analyze processes, threads and scheduling algorithms.
CO4	Outline the concepts of deadlock.
CO5	Explain I/O management and file system, concepts of protection and security, memory management scheme.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3												2	2	2
CO2	3	2											2	2	2
CO3	3	2											3	2	2
CO4	3	2											2	2	2
CO5	3	2											2	2	2
	3.0	2											2.2	2	2

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Department of Computer Science & Engineering

Course: B.Tech
Sem/Year: III/II

Sub: Data Structure & Algorithms lab
Sub_Code: B022321(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Implement linear and non linear data structures using linked list.
CO2	Apply various data structures such as stack, queue and tree to solve the problems.
CO3	Implement various searching and sorting techniques.
CO4	Analyze the complexity of the algorithms.
CO5	Choose appropriate data structure while designing the applications.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3		2										2	2	2
CO2	3	2	2										2	2	2
CO3	3	2	2	2									3	2	2
CO4	3	3	2	2									2	2	2
CO5	3	3	2	2									2	2	2
	3.0	2.5	2	2									2.2	2	2

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Course: B.Tech
Sub: Data Digital Electronics & Logic Design Lab
Sem/Year: III/II
Sub_Code: B022322(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Define the digital trainer Kit and associated equipment and Study and design of TTL Gates.
CO2	Analysis the working of Half adders and full Adders.
CO3	Examine the procedures for the analysis and design of Multiplexers and de-multiplexers.
CO4	Implement the designing of BCD to seven segment displays.
CO5	Designing of various types of sequential circuits like flip flops, registers.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1			2		2								2	2	2
CO2	2	2	3	2	2								2	2	2
CO3	3	2	3	2	2								3	2	2
CO4	3		3		2								2	2	2
CO5	1	2	3		2								2	2	2
	2.3	2	2.8	2	2								2.2	2	2

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Department of Computer Science & Engineering

Course: B.Tech
Sem/Year: III/II

Sub: Operating Systems Lab
Sub_Code: B022323(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Describe basic and advanced Unix commands.
CO2	Apply knowledge of programming language development tools.
CO3	Utilize the knowledge of Unix/Linux system administration and networking.
CO4	Analyze and understand genesis and diversity of both Linux and Unix system utilities
CO5	Describe current research trends in Operating System (Linux being the reference Operating System).

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	2	2								2	2	2
CO2	2	2	1	2	2								2	2	2
CO3	2	2	1	3	2								3	2	2
CO4	2	2	1	3	2								2	2	2
CO5	2	2	1	3	2								2	2	2
	2.0	2	1	2.6	2								2.2	2	2

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Department of Computer Science & Engineering

Course: B.Tech
Sem/Year: III/II

Sub: Data Software Laboratory (Sci LabMATLAB)
Sub_Code: B022324(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the main features of matlab and scilab program environment.
CO2	Explain the properties and operations of arrays and matrices.
CO3	Understanding the concept of calculation, programming, and animation.
CO3	Apply various functions for calculations of factorial, recursion, geometric series etc.
CO4	Understand the concepts of roots and eign values and vectors.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	2	2	1	2	2								2	2	2
CO2	2	2	1	2	2								2	2	2
CO3	2	2	1	3	2								3	2	2
CO4	3	2	2										2	2	2
CO5	2	2	1	2	2								2	2	2
	2.2	2	1.2	2.25	2								2.2	2	2

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Discrete Mathematics

Sem/Year: IV/II

Sub_Code: B022411(014)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Able to apply mathematical logic and Boolean algebra in switching circuits & logic circuits.
CO2	Familiar with set theory, relation and functions
CO3	Familiar with algebraic structures, graph theory and combinatorics.
CO4	Able to solve problems in various fields in computer science, specially networking.
CO5	Familer with Permutation and combination, recurrance relation and mathematical induction.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	2	3									2	2	2
CO2	3	3	2	3									2	2	2
CO3	3	3	2	3									2	2	2
CO4	3	3	2	3									2	2	2
CO5	3	3	2	3									2	2	2
	3.0	3	2	3									2	2	2

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Computer System Architecture

Sem/Year: IV/II

Sub_Code: B022412(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Identify the basic hardware components of a computer system.
CO2	Familiarize themselves with binary and hexadecimal number systems including computer arithmetic.
CO3	Familiarize themselves with functional units of the processor such as the register file and arithmetic logical unit.
CO4	Understand basics functionality of systems: parallel, pipelined, superscalar and RISC/CISC architectures.
CO5	Represent system design in appropriate formats; addressing modes, an instruction sets as per the system configuration requirements.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	2	2									2	3	3
CO2	3	3	2	2									2	3	3
CO3	3	3	2	2									2	3	3
CO4	3	3	2	2									2	3	3
CO5	3	3	2	2									2	3	3
	3.0	3	2	2									2	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Database Management System

Sem/Year: IV/II

Sub_Code: B022413(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Be familiar with basic concepts of RDBMS, Relational data model & be able to write relational algebra expressions for queries.
CO2	Be familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B-tree and hashing.
CO3	Understand DML, DDL and will be able to construct queries using SQL by knowing the importance of data & its requirements in any applications.
CO4	Utilize a database modelling technique for a single entity class, a one-to-one (1:1) relationship between entity classes, a one-to-many (1:M) relationship between entity classes, a many-to-many (M:M) relationship between entity classes, and recursive relationships.
CO5	Be familiar with the basic issues of transaction, its processing and concurrency control.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2								3	3	3
CO2	3	3	3	3	2								3	3	3
CO3	3	3	3	3	2								3	3	3
CO4	3	3	3	3	2								3	3	3
CO5	3	3	3	3	2								3	3	3
	3.0	2.8	2.8	2.8	2								3	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Object Oriented Programming with JAVA

Sem/Year: IV/II

Sub_Code: B022414(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Apply Java in developing Object Oriented code.
CO2	Apply the knowledge of Multi-threading and Streams in developing Java applications.
CO3	Design and implement applications using GUI and Networking in Java.
CO4	Apply the knowledge of Collections and Generics for building Java applications.
CO5	Design and develop Java based applications for solutions to real world problems.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	3								3	3	3
CO2	3	3	3	2	3								3	3	3
CO3	3	3	3	2	3								3	3	3
CO4	3	3	3	2	3								3	3	3
CO5	3	3	3	2	3								3	3	3
	3.0	3	3	2	3								3	3	3

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Department of Computer Science & Engineering

Course: B.Tech
Sem/Year: IV/II

Sub: Design & Analysis of Alogrithms
Sub_Code: B022415(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Calculate the Time complexity of Insertion sort, Heap sort, Bubble sort, Linear and Binary search algorithms.
CO2	Apply the algorithms and design techniques to solve problems related to divide and conquer and Greedy Algorithm
CO3	Analyse Dynamic programming problems including Matrix chain multiplication, Longest Common subsequence and Knapsack Problem.
CO4	Understand the implementation of Backtracking and Recursive Backtracking Methods.
CO5	Understand the basic concepts of NP-Hard, NP-Complete and Branch and Bound methods.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	2	3								2	3	3
CO2	3	2	3	2	3								2	3	3
CO3	3	2	3	2	3								3	3	3
CO4	3	2	3	2	2								2	3	3
CO5	3	2	3	2	2								2	3	3
	3.0	2	3	2	2.6								2.2	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Computer System Architecture Lab

Sem/Year: IV/II

Sub_Code: B022421(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Assemble the hardware part of the computer system and will be able to partition the memory and format the system.
CO2	Install different types of OS and BIOS setup and Configuration.
CO3	Trace the Circuit using Multimeter and perform continuity test mode, able to draw the schematic
CO4	Design and simulate digital circuit like multiplexer, demultiplexer and ALU in VHDL.
CO5	Use terminal Windows for Linux (multiuser and a free and open-source) and DOS (Single User) user OS.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	2	3	2								2	3	3
CO2	3	2	2	2	2								2	3	3
CO3	3	3	2	2	2								2	3	3
CO4	3	3	3	3	2								2	3	3
CO5	3	3	3	3	2								2	3	3
	3.0	2.8	2.4	2.6	2								2	3	3

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Department of Computer Science & Engineering

Course: B.Tech **Sub:** Object Oriended Programming with JAVA Lab

Sem/Year: IV/II **Sub_Code:** B022422(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
CO2	Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
CO3	Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
CO4	Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
CO5	Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2								2	3	3
CO2	3	2	3	2	2								2	3	3
CO3	3	2	3	2	2								2	3	3
CO4	3	2	3	2	2								2	3	3
CO5	3	2	3	2	2								2	3	3
	3.0	2	2.8	2	2								2	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Database Management Systems Lab

Sem/Year: IV/II

Sub_Code: B022423(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Write efficient DB handling codes in DML, DDL and will be able to construct queries using SQL by knowing the importance of data & its requirements in any applications.
CO2	Write codes using efficient database storage structures and access techniques: file and page organizations, indexing methods including B-tree and hashing, transaction processing and concurrency control.
CO3	Write programs in PL/SQL using cursor, functions, triggers.
CO4	Write programs in PL/SQL, to generate the Report.
CO5	Design the database of any organisation with Front end and Back end with database connectivity.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	2	2								2	3	3
CO2	3	2	3	2	2								2	3	3
CO3	3	2	3	2	2								2	3	3
CO4	3	2	3	2	2								2	3	3
CO5	3	2	3	2	2								2	3	3
	3.0	2	3	2	2								2	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Virtual Lab

Sem/Year: IV/II

Sub_Code: B022424(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Able to understand the basic concepts, syntax and uses of PHP as general purpose language.
CO2	Able to understand basic of PHP as scripting Language and implement Arrays in PHP.
CO3	Able to understand and implement decision making, looping and other object oriented features supported by PHP.
CO3	Students able to understand latest framework supported by PHP and implement forms using PHP.
CO4	Students able to develop a web application using PHP and MySQL as database.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2								2	3	3
CO2	3	2	2	2									2	3	3
CO3	2	2	2	3	2								2	3	3
CO4	2	2	2	2									2	3	3
CO	2	2	3	2	2								2	3	3
	2.4	2	2.2	2.2	2								2	3	3

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Department of Computer Science & Engineering

Course: B.Tech
Sub: Microprocessors & Interfaces
Sem/Year: V/III
Sub_Code: C022511(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Apply basic concepts of digital fundamentals to Microprocessor based personal computer system
CO2	Identify a detailed software& hardware structure of the Microprocessors
CO3	Design, write and test assembly language programs of moderate complexity
CO4	Illustrate how the different peripherals are interfaced with Microprocessor
CO5	Apply concepts of microprocessor for developing system to solve real world problems

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	1	1	1											1	1
CO2	1	3	1	1	3								1	1	1
CO3	3	2	2	1	3								2	1	1
CO4	2	2	3	2									3	2	2
CO5	3	2	3	2									3	2	2
	2.0	2	2	1.5	3								2.25	1.4	1.4

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Computer Networks

Sem/Year: V/III

Sub_Code: C022512(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the basic concepts of computer network.
CO2	Understand the basic structure of an abstract layered Network protocol model for any Networking environment.
CO3	Identify and apply basic theorems and formulae for the information-theoretic basis of communication and the performance of TCP/IP network protocols.
CO4	Acquire reflective practice necessary to support a career in Computer Networking at advanced professional level
CO5	Understand different protocols, software, and network architectures, their topologies, protocols in any networking application domains.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2												2	2
CO2	3	2												2	2
CO3	3	2	2											2	2
CO4	3	2	2											2	2
CO5	3	2	2	2										2	2
	3.0	2	2	2										2	2

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Formal Languages and Automata Theory

Sem/Year: V/III

Sub_Code: C022513(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Design finite automata to accept a set of strings of a language.
CO2	Determine whether the given language is regular or not.
CO3	Design context free grammars to generate strings of context free language.
CO4	Design push down automata and the equivalent context free grammars and Design Turing machine.
CO5	Distinguish between computability and non-computability, Decidability and un-decidability.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	2									2	3	3
CO2	3	3	3	2									2	3	3
CO3	3	3	3	2									2	3	3
CO4	3	3	3	2									2	3	3
CO5	3	3	3	2									2	3	3
	3.0	3	3	2									2	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Data Analytics with PYTHON

Sem/Year: V/III

Sub_Code: C022514(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Use various data structures available in Python
CO2	Apply the concepts of Data Analysis.
CO3	Apply the use of Numpy Library for performing various data processing activities.
CO4	Apply the use of Pandas library for data handling activities.
CO5	Apply the use of Matplotlib for data visualization activities.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	3									3	3	3
CO2	3	3	3	3									3	3	3
CO3	3	3	3	3									3	3	3
CO4	3	3	3	3									3	3	3
CO5	3	3	3	3									3	3	3
	3.0	3	3	3									3	3	3

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Department of Computer Science & Engineering

Course: B.Tech
Sem/Year: V/III

Sub: Multimedia & Virtual Reality
Sub_Code: C022534(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Know the fundamental video, audio, image, text processing techniques
CO2	Acquire the basic skill of designing video compression, audio compression, image compression, text compression.
CO3	Know the basic techniques in designing video transmission systems: error control and rate control.
CO4	Know the technologies related to virtual reality and application of virtual reality system.
CO5	Get familiar with VRML programming.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	1	2									2	3	3
CO2	3	2	1	2	2								2	3	3
CO3	3	2	1	2	2								2	3	3
CO4	3	2	1	2	2								2	3	3
CO5	3	2	1	2	2								2	3	3
	3.0	2	1	2	2								2	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Microprocessors & Interfaces Lab

Sem/Year: V/III

Sub_Code: C022521(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system.
CO2	Identify a detailed s/w & h/w structure of the Microprocessor.
CO3	Design, write and test assembly language programs of moderate complexity.
CO4	Illustrate how the different peripherals are interfaced with Microprocessor.
CO5	Apply concepts of microprocessor for developing system to solve real world problems.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	2	2	1	2	2								2	2	2
CO2	2	2	1	2	2								2	2	2
CO3	2	2	1	3	2								3	2	2
CO4	3	2	2										2	2	2
CO5	2	2	1	2	2								2	2	2
	2.2	2	1.2	2.25	2								2.2	2	2

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Computer Networks Lab

Sem/Year: V/III

Sub_Code: C022522(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Explain and Design LAN.
CO2	Working knowledge of datagram and internet socket programming
CO3	Configure Windows 2003 /2000/DHCP, Proxy Server.
CO4	Configure L2/L3 Switches.
CO5	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	2	2	2	2	2										
CO2	2	2			2										
CO3	2	2	2	2	2								2	2	2
CO4	2	2	2	2	2								2	2	2
CO5	2	2	2	2	2								2	2	2
	2.0	2	2	2	2								2	2	2

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Data Analytics with PYTHON Lab

Sem/Year: V/III

Sub_Code: C022523(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Use various data structures available in Python.
CO2	Apply the concepts of Data Analysis.
CO3	Apply the use of Numpy Library for performing various data processing activities.
CO4	Apply the use of Pandas library for data handling activities.
CO5	Apply the use of Matplotlib for data visualization activities.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	3	3								3	3	3
CO2	3	3	3	3	3								3	3	3
CO3	3	3	3	3	3								3	3	3
CO4	3	3	3	3	3								3	3	3
[illegible]	3	3	3	3	3								3	3	3
	3.0	3	3	3	3								3	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: PROJECT-I Lab

Sem/Year: V/III

Sub_Code: C022524(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understand the practical implementation of new techniques and languages.
CO2	Students will be able to identify and present the objective and the work done during training.
CO3	Students will be able to apply the learned concept through design, analysis and development of mini project.
CO3	Students will be able to design and implementation of mini project during their training.
CO4	Students will be able to discuss the result/output and prepare a mini project report.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2								3	3	3
CO2	3	2	2	2	2	2		2	2		2	2	3	3	3
CO3	3	2	2	2	2	2		2	2		2	2	3	3	3
CO4	3	3	3	2	2	2		2	2		2	2	3	3	3
CO5	3	3	2	3	2								3	3	3
	3.0	2.4	2.2	2.2	2	2		2	2		2	2	3	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Compiler Design

Sem/Year: VI/III

Sub_Code: C022611(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Explain the concepts of Compilers and roles of the lexical analyzer.
CO2	Apply the concepts of different Parsing techniques and implement the knowledge to Yacc tool.
CO3	Develop syntax directed translation schemes.
CO4	Implement the principles of scoping, parameter passing and runtime memory management.
CO5	Use the new code optimization techniques to improve the performance of a program in terms of speed & space and develop algorithms to generate code for a target machine.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2											1	2	2
CO2	2	2												2	2
CO3	2	2	2		2								1	2	2
CO4	2	2	2		2									2	2
CO5	2	2	2	2									1	2	2
	2.0	2	2	2	2								1	2	2

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Department of Computer Science & Engineering

Course: B.Tech
Sub: Software Engineering & Project Management
Sem/Year: VI/III
Sub_Code: C022612(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To understand and conceptualize the process of Software Development Life Cycle (SDLC) models.
CO2	Apply use of knowledge of Software Life Cycle to implement the projects successfully in the corporate world.
CO3	Identify the Inputs, Tools and techni ques to get the required Project deliverables and Product deliverables using 10 Knowledge areas of Project Management.
CO4	To familiarize with Project Management framework.
CO5	Implement Project Management Processes to successfully complete project in IT ind ustry.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	2	2				2		1		3	3	3
CO2	3	3	3	2	2				3		1		3	3	3
CO3	3	3	3	2	2				2		1		3	3	3
CO4	3	3	3	2	2				2		1		3	3	3
CO5	3	3	3	2	2				2		1		3	3	3
	3.0	3	3	2	2				2.2		1		3	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Artificial Intelligence & Expert Systems

Sem/Year: VI/III

Sub_Code: C022613(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the basic principles of AI towards problem solving and perception.
CO2	Understand the basic principles of Knowledge representation and inference.
CO3	Acquire basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language.
CO4	Experiment with a machine-learning model for simulation of intelligent systems in NLP systems and Planning Problems.
CO5	Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural Networks and other machine learning models.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2								2	2	2	2
CO2	2	2	2	2								2	2	2	2
CO3	2	2	2	2								2	2	2	2
CO4	2	2	2	2								2	2	2	2
CO5	2	2	2	2								2	2	2	2
	2.0	2	2	2								2	2	2	2

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Department of Computer Science & Engineering

Course: B.Tech

Sem/Year: VI/III

Sub: Cyber Security

Sub_Code: C000614(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to acknowledge about the cybercrime, cyber criminal, and intellectual property rights.
CO2	Encouraging Open Standards.
CO3	Protection and resilience of Critical Information Infrastructure.
CO4	To enable effective prevention, investigation and prosecution of cybercrime and enhancement of law enforcement capabilities through appropriate legislative intervention.
CO5	Students will be able to acknowledge about the Cyber Law and Related Legislation.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	2			2					3	3	3
CO2	3	2	2	3	2								3	3	3
CO3	3	3	3	3	2			2					3	3	3
CO4	3	3	3	3	2			2					3	3	3
CO5	3	2	2	3				2					3	3	3
	3.0	2.4	2.4	3	2			2					3	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Web Technologies

Sem/Year: VI/III

Sub_Code: C022631(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To design web sites utilizing multiple tools and techniques
CO2	To demonstrate the ability to create dynamic pages that are easy to navigate and easy to update.
CO3	To utilize entry level system analysis and design princip les to solve business problems.
CO3	To demonstrate the ability to apply testing, debugging, and troubleshooting skills.
CO4	To exhibit the ability to design and implement an internet database.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	2	2								3	3	3
CO2	3	2	2	2	2								3	3	3
CO3	3	2	3	2	2								3	3	3
CO4	3	2	2	2	2								3	3	3
CO5	3	2	3	2	2								3	3	3
	3.0	2	2.6	2	2								3	3	3

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Department of Computer Science & Engineering

Course: B.Tech **Sub:** Software Engineering & Project Management Lab

Sem/Year: VI/III **Sub_Code:** C022621(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Define various software application domains and remember different process model used in software development.
CO2	Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
CO3	Convert the requirements model into the design model and demonstrate use of software and user-interface design principles.
CO4	Justify the role of SDLC in Software Project Development and evaluate importance of Software Engineering in PLC.
CO5	Generate project schedules, deliverables and construct, design and develop network diagram for different type of projects; also practising the activities of each phase.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	2	2	2				2		2	1	2	2	2
CO2	3	3	3		2				2		2	1	2	2	2
CO3	3	3	3	2	2				2		2	1	3	2	2
CO4	3	3	3	2	2				2		2	1	2	2	2
CO5	3	3	3	2	2				2		2	1	**2**	**2**	**2**
	3.0	3	2.8	2	2				2		2	1	2.2	2	2

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Department of Computer Science & Engineering

Course: B.Tech
Sub: Artificial Intelligence & Expert Systems Lab

Sem/Year: VI/III
Sub_Code: C022622(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Acquire an overview of logic constructs for performing inferencing techniques. (First Order Predicate Calculus) in toy problems /classical problems using PROLOG / LISP syntax.
CO2	Gain confidence in drafting production rules (iterative / recursive) for an AI simulating code, given a story domain.
CO3	Understand, on how to use different data structures (lists, trees, stacks and queues) for solving routing problems and implementing heuristic searches.
CO4	Gain exposure to deal with situations that crop up syntax / compile-time / run-time errors.
CO5	Simulate game playing / puzzle problemsusing general solution in PROLOG / LISP syntax.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	3								2	3	3
CO2	3	2	2	2	2								2	3	3
CO3	3	2	2	2	3								3	3	3
CO4	3	3	2	2	2								2	3	3
CO5	3	3	2	2	3								2	3	3
	3.0	2.4	2	2	2.6								2.2	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Web Technologies Lab

Sem/Year: VI/III

Sub_Code: C022623(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Build and learn web development technologies.
CO2	Analyze a web page and identify its elements and attributes.
CO3	Build career in professional web site designing with good aesthetic sense of designing.
CO4	Have a Good grounding of back-end scripting.
CO5	Pursue their research-oriented career in the relevant and allied domains.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3		2								2	3	3
CO2	3	2	3	2	2								2	3	3
CO3	3	2	3	2	2								3	3	3
CO4	3	2	3		2								2	3	3
CO5	3	2	3		2								2	3	3
	3.0	2	3	2	2								2.2	3	3

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Department of Computer Science & Engineering

Course: B.Tech

Sub: Android Application Lab

Sem/Year: VI/III

Sub_Code: C022611(022)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand basic concepts and technique of developing applications for the Android phone.
CO2	Able to use the SDK and other development tools.
CO3	Acquire to know, how to publish Android applications to the Android Market.
CO4	Examine responsive user interface across wide range of devices.
CO5	Create a mobile Application by using various components like activity, views, services, content providers and receivers.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	2	2	2	2	2							1	2	2	2
CO2	2	2	2	2	2							1	2	2	2
CO3	2	2	2	2	2							1	2	2	2
CO4	2	2	2	2	2							1	2	2	2
CO5	2	2	2	2	2							1	2	2	2
	2.0	2	2	2	2							1	2	2	2

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Department of Computer Science & Engineering

Course: B.E. **Sub:** Mobile Computing & Application

Sem/Year: VII/IV **Sub_Code:** 322731(33)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the basic concepts of Cell Coverage &, Frequency Management.
CO2	Understand the basic physical-layer architecture of a mobile communication system.
CO3	Understand various multiple-access techniques for mobile communications, and their advantages and disadvantages.
CO4	Students will be able to acknowledge about the working and development of mobile and wireless devices in detail, services provided by them and recent application development trends in this field.
CO5	Students will be able to understands Mobile System Development and Support.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2											2	2	2
CO2	3	2	2										2	2	2
CO3	3	2	2	3									2	2	2
CO4	3	2	3	3									2	2	2
CO5	3	2	2	3									2	2	2
	3.0	2	2.25	3									2	2	2

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Department of Computer Science & Engineering

Course: B.E.

Sub: Processor and Computing

Sem/Year: VII/IV

Sub_Code: 322732(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To understand structural intuition of how the hardware and the software work, starting from simple systems to complex shared resource architectures.
CO2	To understand concepts related to memory consistency models, cache coherence, interconnection networks, and latency tolerating techniques.
CO3	Have an understanding of parallel algorithms, analysis and architectures.
CO4	Be able to reason about ways to parallelize a problem
CO5	Design and analyze the algorithms that execute efficiently on parallel computers

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	2	3	2										2	2	2
CO2	3	2	2										2	2	2
CO3	3	2	2	3									2	2	2
CO4	3	3	2	3									2	2	2
CO5	3	3	3	3									2	2	2
	2.8	2.6	2.2	3									2	2	2

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Department of Computer Science & Engineering

Course: B.E.

Sub: Network Programming

Sem/Year: VII/IV

Sub_Code: 322733(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Familiar with protocols, network interfaces, and Design/performance issues in local area networks and wide area networks,
CO2	Familiar with basics of Socket and Socket programming.
CO3	Familiar with contemporary issues in networking technologies,
CO4	Familiar with network tools and network programming.
CO5	Familiar with client server programming.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	3									2	2	2
CO2	3	2	2	3									2	2	2
CO3	3	3	2	3	3								2	2	2
CO4	3	3	2	3	3								2	2	2
CO5	3	2	2	3	3								2	2	2
	3.0	2.4	2	3	3								2	2	2

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Department of Computer Science & Engineering

Course: B.E. **Sub:** Cryptography & Network Security

Sem/Year: VII/IV **Sub_Code:** 322734(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	The students will be able to explain Conventional encryption algorithms for confidentiality and their design principles
CO2	The students will be able to explain Public key encryption algorithms and their design principles
CO3	The students will be able to explain Use of message authentication codes, hash functions , digital signature and public key certificates
CO4	The students will be able to explain Network security tools and applications
CO5	The students will be able to explain System-level security issues like threat of and countermeasures for intruders and viruses, and the use of firewalls and trusted systems.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2									2	2	2
CO2	3	2		2									2	2	2
CO3	3	2	2										2	2	2
CO4	3	2	2	2									2	2	2
CO5	3	2	2	2									2	2	2
	3.0	2	2	2									2	2	2

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Department of Computer Science & Engineering

Course: B.E.

Sub: Cloud computing

Sem/Year: VII/IV

Sub_Code: 322746(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to perform cloud oriented analysis.
CO2	Students will be able to model cloud candidate derived from existing business documentation.
CO3	Students will be able to design the composition of a cloud services
CO3	Students will be able to design application services for technology abstraction
CO4	Understand the Virtualization concepts & Smartphone

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2			2								2	2	2
CO2	3	2			2								2	2	2
CO3	3	2			2								2	2	2
CO4	3	2			2								2	2	2
CO5	3	2											2	2	2
	3.0	2			2								2	2	2

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Department of Computer Science & Engineering

Course: B.E.

Sub: Soft Computing Lab (Matlab/Sci lab)

Sem/Year: VII/IV

Sub_Code: 322761(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	students will be able to Understand the need for Soft Computing.
CO2	students will be able to Understand different uses of Soft Computing in various areas.
CO3	students will be able to Understand the steps involved in the development of Soft Computing.
CO4	students will be able to Acquire a working knowledge of some popular tools for Soft Computing.
CO5	students will be able to Design, implement and verify computing systems by using appropriate Soft Computing techniques and tools.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2										2	2	2
CO2	3	2	2										2	2	2
CO3	3	2	2	2									2	2	2
CO4	3	2	2	2	3								2	2	2
CO5	3	2	2	2	3								2	2	2
	3.0	2	2	2	3								2	2	2

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Department of Computer Science & Engineering

Course: B.E.

Sem/Year: VII/IV

Sub: Network Programming Lab

Sub_Code: 322762(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Write an echo program with client and iterative server using TCP.
CO2	Write an echo program with client and concurrent server using TCP.
CO3	Write a client and server program for chatting.
CO4	Write a program to retrieve date and time using TCP.
CO5	Write a program to retrieve date and time using UDP.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2								2	3	2
CO2	3	2	2	2	2								2	3	2
CO3	3	2	2	2	2								2	3	2
CO4	3	2	2	2	2								2	3	2
CO5	3	2	2	2	2								2	3	2
	3.0	2	2	2	2								2	3	2

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Department of Computer Science & Engineering

Course: B.E.

Sub: Android Lab

Sem/Year: VII/IV

Sub_Code: 322763(33)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understands basic concepts and technique of developing applications for the Android phone.
CO2	Able to use the SDK and other development tools.
CO3	Acquaintances with how to publish Android applications to the Android Market.
CO4	Create GUI and handle events in Android applications.
CO5	Develop applications with data storage, APIs and Databases

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	2								3	3	3
CO2	3	2	2	2	2								3	3	3
CO3	3	2	2	3	2								3	3	3
CO4	3	2	2	3	2								3	3	3
CO5	3	2	2	3	2								3	3	3
	3.0	2	2	2.6	2								3	3	3

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Department of Computer Science & Engineering

Course: B.E.

Sub: Minor Project

Sem/Year: VII/IV

Sub_Code: 322764(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the practical implementation of new techniques and languages.
CO2	Identify and present the objective and the work done during training.
CO3	Apply the learned concept through design, analysis and development of mini project.
CO4	Design and implementation of mini project during their training.
CO5	Discuss the result/output and prepare a mini project report.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2								3	3	3
CO2	3	2	2	2	2	2		2	2		2	2	3	3	3
CO3	3	2	2	2	2	2		2	2		2	2	3	3	3
CO4	3	3	3	2	2	2		2	2		2	2	3	3	3
CO5	3	3	2	3	2								3	3	3
	3.0	2.4	2.2	2.2	2	2		2	2		2	2	3	3	3

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Department of Computer Science & Engineering

Course: B.E. **Sub:** Internet & Web Technology

Sem/Year: VIII/IV **Sub_Code:** 300815(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To develop a thorough understanding of the major aspects of web data representation and web content delivery platforms.
CO2	Proper evaluate, develop, and enhance the distributed web applications
CO3	Students will be able to understand bouded web.
CO4	Students will be able to understand unbouded web.
CO5	Students will be able to understand web Systems Technology.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3		3		2								3	3	3
CO2	3	2	3		2								3	3	3
CO3	3	2	2										3	3	3
C[illegible]	3	2	2										3	3	3
CO5	3	2	2		2								3	3	3
	3.0	2	2.4		2								3	3	3

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Department of Computer Science & Engineering

Course: B.E.

Sub: Artificial Intelligence & Expert Systems

Sem/Year: VIII/IV

Sub_Code: 322831(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Demonstrate fundamental understanding of artificial intelligence (AI) and expert systems.
CO2	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
CO3	Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.
CO4	Demonstrate proficiency in applying scientific method to models of machine learning.
CO5	Students will be understands the concepts of NLP , AI & Expert System.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	2	3									3	3	3
CO2	3	3	2	3									3	3	3
CO3	3	3	2	3									3	3	3
CO4	3	3	2	3									3	3	3
CO5	3	3	2	3									3	3	3
	3.0	3	2	3									3	3	3

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Department of Computer Science & Engineering

Course: B.E.

Sub: Data Mining & Warehousing

Sem/Year: VIII/IV

Sub_Code: 322832(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Design a data warehouse for an organization
CO2	Develop skills to write queries using DMQL
CO3	Extract knowledge using data mining techniques
CO4	Adapt to new data mining tools.
CO5	Explore recent trends in data mining such as web mining, spatial-temporal mining.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2								3	3	3
CO2	3	3	3	2	2								3	3	3
CO3	3	2	2	3	2								3	3	3
CO4	3	3	2	2	2								3	3	3
C	3	3	3	2	2								3	3	3
	3.0	2.8	2.6	2.2	2								3	3	3

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Department of Computer Science & Engineering

Course: B.E.

Sub: Cyber Security

Sem/Year: VIII/IV

Sub_Code: 322833(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to acknowledge about the cybercrime, cyber criminal, and intellectual property rights.
CO2	Encouraging Open Standards.
CO3	Protection and resilience of Critical Information Infrastructure.
CO4	To enable effective prevention, investigation and prosecution of cybercrime and enhancement of law enforcement capabilities through appropriate legislative intervention.
CO5	Students will be able to acknowledge about the Cyber Law and Related Legislation.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	2			2					3	3	3
CO2	3	2	2	3	2								3	3	3
CO3	3	3	3	3	2			2					3	3	3
CO4	3	3	3	3	2			2					3	3	3
CO5	3	2	2	3				2					3	3	3
	3.0	2.4	2.4	3	2								3	3	3

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Department of Computer Science & Engineering

Course: B.E.

Sub: Decision Support System

Sem/Year: VIII/IV

Sub_Code: 322843(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Recognize the relationship between business information needs and decision making.
CO2	Appraise the general nature and range of decision support systems.
CO3	Appraise issues related to the Analyse, design, development and implement a DSS.
CO4	Select appropriate modeling techniques.
CO5	To understand that most Decision Support Systems are designed to support rather than replace decision makers and the consequences of this perspective for designing DSS.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3									2	2	2
CO2	3	2	2	3									2	2	2
CO3	3	3	2	3	3								2	2	2
CO4	3	3	2	3	3								2	2	2
CO5	3	2	2	3	3								2	2	2
	3.0	2.4	2	3	3								2	2	2

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Department of Computer Science & Engineering

Course: B.E.
Sub: Artificial Intelligence & Expert Systems Lab

Sem/Year: VIII/IV
Sub_Code: 322861(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Acquire an overview of logic constructs for performing inferencing techniques. (First Order Predicate Calculus) in toy problems /classical problems using PROLOG / LISP syntax.
CO2	Gain confidence in drafting production rules (iterative / recursive) for an AI simulating code, given a story domain.
CO3	Understand, on how to use different data structures (lists, trees, stacks and queues) for solving routing problems and implementing heuristic searches.
CO4	Gain exposure to deal with situations that crop up syntax / compile-time / run-time errors.
CO5	Simulate game playing / puzzle problemsusing general solution in PROLOG / LISP syntax.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3		2										3	3	3
CO2	3	2	2										3	3	3
CO3	3	2	2	2									3	3	3
CO4	3	3	2	2									3	3	3
CO5	3	3	2	2									3	3	3
	3.0	2.5	2	2									3	3	3

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Department of Computer Science & Engineering

Course: B.E.

Sub: Network Security Lab

Sem/Year: VIII/IV

Sub_Code: 322862(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Develop programs to implement various encryption and decryption techniques.
CO2	Develop programs to implement symmetric and asymmetric key crypto system.
CO3	Develop programs to implement message authentication codes, digital signature.
CO4	Use the cryptographic packages available in JDK.
CO5	To implement standard algorithms used to provide confidentiality, integrity and authenticity.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3		2										3	3	3
CO2	3	2	2										3	3	3
CO3	3	2	2	2									3	3	3
CO4	3	3	2	2									3	3	3
CO	3	3	2	2									3	3	3
	3.0	2.5	2	2									3	3	3

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Department of Computer Science & Engineering

Course: B.E.

Sub: Software Technology Lab

Sem/Year: VIII/IV

Sub_Code: 322863(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Design and implement dynamic websites with good aesthetic sense of designing and latest technical knowhow's.
CO2	Have a Good grounding of Web Application Terminologies, Internet Tools, E – Commerce and other web services.
CO3	Develop and demonstrate a XHTML document that illustrates the use external style sheet, ordered list, table, borders, padding, color, and the tag.
CO3	Develop and demonstrate, using JavaScript script, a XHTML document that contains three short paragraphs of text, stacked on top of each other, with only enough of each showing so that the mouse cursor can be placed over some part of them. When the cursor is placed over the exposed part of any paragraph, it should rise to the top to become completely visible.
CO4	Create a XHTML form with Name, Address Line 1, Address Line 2, and E-mail text fields. On submitting, store the values in MySQL table. Retrieve and display the data based on Name.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	2	2				1	1	1	1	2	3	3
CO2	3	3	3	3	3	1			2	2	2	1	2	3	3
CO3	3	3	3	2	3	1			2	2	2	1	2	3	3
CO4	3	3	3	3	3	1			2	2	2	1	2	3	3
CO5	3	3	3	3	2				1		1	1	2	3	3
	3.0	3	3	2.6	2.6	1			1.6	1.75	1.6	1	2	3	3

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Department of Computer Science & Engineering

Course: B.E.

Sub: Major Project

Sem/Year: VIII/IV

Sub_Code: 322864(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Demonstrate the depth of knowledge in the field of computer science and to generate ideas and information which can be applied to the research work.
CO2	Develop critical thinking and problem solving skills to plan and execute a substantial research project.
CO3	Identify and demonstrate various facilities in research designs and data collection strategies that are most appropriate to a particular research project.
CO4	Develop the skills to communicate effectively and to present ideas clearly and coherently.
CO5	Demonstrate leadership and professional skills requisite for future academic research and professional pursuits.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	2	2				1	1	1	1	2	3	3
CO2	3	3	3	3	3	1			2	2	2	1	2	3	3
CO3	3	3	3	2	3	1			2	2	2	1	2	3	3
CO4	3	3	3	3	3	1			2	2	2	1	2	3	3
CO5	3	3	3	3	2				1		1	1	2	3	3
	3.0	3	3	2.6	2.6	1			1.6	1.75	1.6	1	2	3	3

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Department of Computer Science & Engineering

Course: M.Tech

Sub: Advanced Computer Architecture

Sem/Year: I/I

Sub_Code: 522113 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understands the concept of parallelism, parallel computer model and network properties.
CO2	Students will be able to understand the concept of advanced processor technology, memory hireachy and virtual memory technology.
CO3	Students will be understands the concepts of bus, catch and shared memory.
CO4	Students will be understands the concepts of Pipelining and Super scalar techniques.
CO5	Students will be able to understand the concept of Parallel and Scalable Architecture.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	2								2	3	3	3
CO2	3	3	3	2								2	3	3	3
CO3	3	3	3	2								2	3	3	3
CO4	3	3	3	2								2	3	3	3
CO5	3	3	3	2								2	3	3	3
	3.0	3.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.0	3.0	3.0

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Department of Computer Science & Engineering

Course: M.Tech
Sem/Year: I/I

Sub: Advanced Computer Networks
Sub_Code: 522114 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understand the concept of different network model, fundamental of digital communication and queuing model.
CO2	Students will be able to understand the concepts of different protocols present in data link layer, IEEE protocols, different algorithm presents in network layer.
CO3	Students will be able to understand the concepts, issues and protocols of transport layer, session layer and presentation layer.
CO4	Students will be understands the concepts and protocols of Application layers.
CO5	Students will be able to understands the concepts of distributes file systems, shared memory system and security concepts.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3		2							2	3	3
CO2	3	3	3	3		2							2	3	3
CO3	3	3	3	3		2							2	3	3
CO4	3	3	3	3		2							2	3	3
CO5	3	3	3	3		2							2	3	3
	3.0	3.0	3.0	3.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.0	3.0

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Department of Computer Science & Engineering

Course: M.Tech

Sub: Java Programming and Applications

Sem/Year: I/I

Sub_Code: 522112 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be understands the basic concepts of java, datatypes, classes, wrapper classes, variables, arrays etc.
CO2	Students will be able to understand the concepts of inheritance, exception handling, throw and throws, packages and interfaces.
CO3	Students will be understands the concepts multithreading programming and its implementation.
CO4	Students will be able to understand the concepts of Input / Output streams, java .net packages, and java networking.
CO5	Students will be able to understand the concepts of event handling, graphical programming and connectivity.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2		2									2	2	2
CO2	2	3	3	2							2	2	2	2	2
CO3	2	3	2	2							2	2	2	2	2
CO4	3	2		2									2	2	2
CO5	3	2	2	2									2	2	2
	2.6	2.4	1.4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	2.0	2.0	2.0

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Department of Computer Science & Engineering

Course: M.Tech

Sub: Java Programming and Applications - Lab

Sem/Year: I/I

Sub_Code: 522122 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Program for matrix multiplication. Use InputStreamReader and Buffered Reader classes for Input/Output.
CO2	Program to animate a string on Applet. Use the concept of Multithreading.
CO3	Program to design a calculator using the AWT controls provided in Java
CO4	Program for Client Server communication using either UDP or TCP protocols. Use ServerSocket and Socket classes.
CO5	Program to create some of the features of Notepad. Use Swings for designing this application.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2		1								3	3	3
CO2	3	2	3		1								3	3	3
CO3	3	2	2		3								3	3	3
CO4	3	2	2		1								3	3	3
CO5	3	2	2		1								3	3	3
	3.0	2.0	2.2	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0

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Department of Computer Science & Engineering

Course: M.Tech
Sub: Analysis and Design of Algorithms

Sem/Year: I/I
Sub_Code: 522134 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understand the concepts of Algorithm development for problem solving, Analyzing efficiency of algorithm and Asymptotic growth rates.
CO2	Students will be able to understand the concept of Divide and Conquer technique of problem solving, sorting algorithms.
CO3	Students will be able to understands the concepts of Graph, Different Searching algorithms, Clousers etc.
CO4	Students will be understands the concepts of Dynamic Programming.
CO5	Students will be able to understand the concepts of String Matching algorithms.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2									2	2		
CO2	3	3	2									2	2		
CO3	3	3	2									2	2		
CO4	3	3	2									2	2		
CO5	3	3	2									2	2		
	3.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0

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Department of Computer Science & Engineering

Course: M.Tech
Sub: Advanced Operating System
Sem/Year: I/I
Sub_Code: 522111(22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be understands the basic concepts of operating systems , types of operating systems, process management, Threads and scheduling.
CO2	Students will be understands the concepts of process synchronization, deadlock, memory management, contagious and non -contagious allocation and memory management.
CO3	Students will be understands the basic concepts of file and directory system, secondary storage management, protection and security.
CO4	Students will be able to understand the basics concepts of distributed system, network topology, network operating system and distributed file system.
CO5	Students will be able to understand the basic concepts of distributed co-ordinations, algorithms and different os case studies.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	2	2								3	2	2
CO2	3	2	3	2	2								3	2	2
CO3	3	2	3	3	2								3	2	2
CO4	3	2	3	2	2								3	2	2
CO5	3	2	3	2	2								3	2	2
	3.0	2.0	3.0	2.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.0	2.0

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Department of Computer Science & Engineering

Course: M.Tech
Sem/Year: I/I

Sub: Advanced Operating System – Lab
Sub_Code: 522121 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will understand the implementation of various CPU scheduling algorithms.
CO2	Students will understand the implementation of various page replacement algorithms.
CO3	Students will be able to understand the r the implementation of Readers Writers problem & Banker's algorithm.
CO4	Students will be able to understand the implementation of various memory allocation algorithms.
CO5	Students will be able to understand the implementation of various Disk scheduling algorithms.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	3	3						2	2	3	3	3
CO2	3	2			3						2	2	3	3	3
CO3	3	2	2	2								2	3	3	3
CO4	3		2	3	3							2	3	3	3
CO5	3		2		2						2	2	3	3	3
	3.0	1.2	1.6	1.6	2.2	0.0	0.0	0.0	0.0	0.0	1.2	2.0	3.0	3.0	3.0

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Department of Computer Science & Engineering

Course: M.Tech
Sem/Year: III/II

Sub: Data Warehousing & Data Mining
Sub_Code: 522311 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Design a data warehouse for an organization
CO2	Develop skills to write queries using DMQL
CO3	Extract knowledge using data mining techniques
CO4	Adapt to new data mining tools.
CO5	Explore recent trends in data mining such as web mining, spatial-temporal mining.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	2	2								3	3	3
CO2	3	3	3	2	2								3	3	3
CO3	3	2	2	3	2								3	3	3
CO4	3	3	2	2	2								3	3	3
C[illegible]	3	3	3	2	2								3	3	3
	3.0	2.8	2.6	2.2	2.0								3.0	3.0	3.0

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Department of Computer Science & Engineering

Course: M.Tech
Sem/Year: III/II

Sub: Enterprise Resource Planning
Sub_Code: 522333 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Able to understand the basic knowledge of Enterprise Resource Planning.
CO2	Abel to Identify different technologies used in Enterprise Resource Planning.
CO3	Abel to understand and apply the concepts of ERP Manufacturing Perspective and ERP Modules.
CO4	Discuss the benefits, Success and Failure Factors of an ERP Implementation.
CO5	Abel to understand and implement the ERP life Cycle. Apply different tools and Software used in ERP.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3		2		2								2	2	2
CO2	2	3	2	2									2	2	2
CO3	2	2	3	2									2	2	2
CO4	1	2	3		2								2	2	2
CO5	2	2	3	2	2								2	2	2
	2.0	1.8	2.6	1.2	1.2								2.0	2.0	2.0

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Department of Computer Science & Engineering

Course: M.Tech

Sub: Preliminary work on Dissertation

Sem/Year: III/II

Sub_Code: 522321 (22)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To develop the work practice in students to apply theoretical and practical tools/ techniques to solve real-life problems related to industry and current research.
CO2	Complete an independent research project, resulting in at least a thesis publication, and research outputs in terms of publications in high impact factor journals, conference proceedings, and patents.
CO3	Demonstrate knowledge of contemporary issues in their chosen field of research.
CO4	Demonstrate an ability to present and defend their research work to a panel of experts.
CO5	To be able to apply the knowledge of computing tools and techniques in the selected field for solving real world problems encountered in the Software Industries.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	2	2			1	3	3			3	3	3
CO2	3	2	2	3	2		2	1		2	1		3	3	3
CO3	3	2	2	2	2				1	1	2		3	3	3
CO4	3	2	2	2	2		2	3		1			3	3	3
CO5	3	2	2	3	2				3		1		3	3	3
	3.0	2.0	2.2	2.4	2.0		0.8	1.0	1.4	1.4	0.8		3.0	3.0	3.0

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CHHATAUNA, MANDIR HASAUD, [illegible]

RAIPUR INSTITUTE OF TECHNOLOGY

(Under the aegis of Mahanadi Education Society)
Approved by AICTE, New Delhi, Affiliated to CSVTU, Bhilai

SINCE 1995
RITEE

Department of Electrical & Electronics Engineering

Course: B.Tech
Sub: Signal & System
Sem/Year: V/III
Sub_Code: C025511(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understand the terminology of signals and basic engineering systems.
CO2	Students will understand the role of signals and systems in engineering design.
CO3	Students will have the understanding of the use of signals and basic system building blocks and their roles in large/complex system design.
CO3	Students will understand signal representation techniques and signal characteristics.
CO4	Students will understand the difference and the applications of analog versus discrete signals and the conversion between them

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	2										3	2	1
CO2	3	3	2										3	2	1
CO3	3	3	2										3	2	1
C	3	3	2										3	2	1
CO5	3	3	2										3	2	1
	3.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.0	1.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Control System Lab

Sem/Year: V/III

Sub_Code: C025521(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To determine the Gain of an Open Loop and Closed Loop System.
CO2	To Study the Effect of Disturbance on an Open loop and Closed Loop System.
CO3	To Determine the Transfer function of a DC Servomotor.
CO4	To determine Transfer Function of an AC Servomotor.
CO5	Study of a basic electrically controlled hydraulic system.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	1	3			1					2	2	
CO2	3	2	1	1	3			1					2	2	
CO3	3	2	1	1	3			1					2	2	
CO4	3	2	1	1	3			1					2	2	
CO	3	2	1	1	3			1					2	2	
	3.0	2.0	1.0	1.0	3.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Control System

Sem/Year: V/III

Sub_Code: C025512(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Ability to acquire and apply fundamental principles of science and technology
CO2	Analyze continuous systems mathematically through the use of Laplace functions and state equations form.
CO3	Represent any physical system in both transfer functions and state equations form
CO4	Apply classical design methods to improve the performance of continuous controlled system
CO5	Identify the basic elements and structures of feedback control systems.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3										1	2	1
CO2	3	3	3										1	2	1
CO3	3	3	3										1	2	1
CO4	3	3	3										1	2	1
CO5	3	3	3										1	2	1
	3.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	1.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Electrical Power System-I Lab

Sem/Year: V/III

Sub_Code: C025521(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Study of types of cables
CO2	Study of types of Insulator used in power system
CO3	Study of Bus –bar arrangement of a power supply sub – station
CO4	Study of Synchronous phase modifier and calculation of its rating
CO5	To measure the A, B, C, D constants of transmission lines.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2											2	1	
CO2	3	2											2	1	
CO3	3	2											2	1	
CO4	3	2											2	1	
C	3	2											2	1	
	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	1.0	0.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sem/Year: V/III

Sub: Electrical Power System-I

Sub_Code: C025513(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Student will be to calculate the resistance, inductance and capacitance of transmission line
CO2	Student will be able to learn how to model the element in power system and able to carry out studies of load flow, transient stability, harmonics and other relevant studies
CO3	Student will be able to calculate the voltage regulation of line and analyze the voltage profile of the transmission line.
CO4	Student will gain an understanding of VAR control using component to improve p.f, location of capacitor, operation of load tap changing can be examine.
CO5	Student will be able to calculate the sag, tension and mechanical stress of a transmission line.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	1	1								1	2	1
CO2	3	2	3	1	1								1	2	1
CO3	3	2	3	1	1								1	2	1
CO4	3	2	3	1	1								1	2	1
CO5	3	2	3	1	1								1	2	1
	3.0	2.0	3.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0	1.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Linear Integrated Circuit

Sem/Year: V/III

Sub_Code: C025531(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	The students will have a thorough understanding of operational amplifiers with linear integrated circuits
CO2	The students will be able to design circuits using operational amplifiers for various applications.
CO3	To introduce the basic building blocks of linear integrated circuits.
CO4	To introduce the theory and applications of analog multipliers and PLL
CO5	To teach the theory of ADC and DAC

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3										3	2	3
CO2	3	2	3										3	2	3
CO3	3	2	3										3	2	3
CO4	3	2	3										3	2	3
CO	3	2	3										3	2	3
	3.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.0	3.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Micro Processor and Micro Controller Lab

Sem/Year: V/III

Sub_Code: C025523(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To add content of two memory locations and store result in another memory locations.
CO2	To find 2's complement of 8 bit number.
CO3	To transfer block of 10 data bytes from one memory location to another.
CO4	To multiply two 8 bit numbers.
CO5	To add contents of a block of 10 data bytes

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2											2	2	
CO2	3	2											2	2	
CO3	3	2											2	2	
CO4	3	2											2	2	
C	3	2											2	2	
	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0

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Department of Electrical & Electronics Engineering

Course: B.Tech
Sub: Micro Processor and Micro Controller
Sem/Year: V/III
Sub_Code: C025514(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the basic architecture of Microprocessor 8085 Microcontroller 8051.
CO2	Understand various instructions and their application in programming
CO3	Understand memory organization and mapping.
CO4	Gain the knowledge of fundamentals of Microprocessors & Micro Controller and their evolution internal architecture and construction.
CO5	Gain the knowledge of various supporting chips provided with the Microprocessor 8085 and Microcontroller 8051.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	2									3	2	
CO2	3	2	3	2									3	2	
CO3	3	2	3	2									3	2	
CO4	3	2	3	2									3	2	
CO5	3	2	3	2									3	2	
	3.0	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.0	0.0

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Department of Electrical & Electronics Engineering

Course: B.Tech **Sub:** Project-I based on Summer Internship/ Industrial Training

Sem/Year: V/III **Sub_Code:** C025524(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understand the practical implementation of new technques and languages.
CO2	Students will be able to identify and present the objective and the work done during training.
CO3	Students will be able to apply the learned concept through design, analysis and development of mini project.
CO4	Students will be able to design and implementation of mini project during their training.
CO5	Students will be able to discuss the result/output and prepare a mini project report.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2								2	2	2
CO2	3	2	2	2	2	2		2	2		2	2	2	2	2
CO3	3	2	2	2	2	2		2	2		2	2	2	2	2
CO4	3	3	3	2	2	2		2	2		2	2	2	2	2
CO	3	3	2	3	2								2	2	2
	3.0	2.4	2.2	2.2	2.0	1.2	0.0	1.2	1.2	0.0	1.2	1.2	2.0	2.0	2.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: AI and Machine learning

Sem/Year: VI/III

Sub_Code: C000629(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the basic principles of AI towards problem solving and perception.
CO2	Understand the basic principles of Knowledge representation and inference.
CO3	Acquire basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language.
CO4	Remember the basic concepts of Machine Learning.
CO5	Able to perform Data Analysis in Machine Learning.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	2	2	2	2								2			
CO2	2	2	2	2								2			
CO3	2	2	2	2								2			
CO4	3	2	2	1											
CO5	3	2	2	1	2										
	2.4	2.0	2.0	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sem/Year: VI/III

Sub: Communication System

Sub_Code: C025631(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand amplitude modulation method and its working
CO2	Understand angle modulation technique viz. FM and PM.
CO3	Understand pulse modulation technique and their advantages.
CO4	Understand digital modulation technique and their advantages over analog modulation techniques.
CO5	Understand the basics of information theory and coding scheme used in communication.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	1	2		3								1	2	3
CO2	3	1	2		3								2	2	3
CO3	3	1	2		3								1	2	3
CO4	3	1	2		3								2	2	3
CO5	3	1	2		3								1	2	3
	3.0	1.0	2.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.0	3.0

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Department of Electrical & Electronics Engineering

Course: B.Tech
Sem/Year: VI/III

Sub: Computer Simulation Lab
Sub_Code: C025623(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Write a program to plot V and inverted V curve.
CO2	Write a program for transformer parameter calculation.
CO3	Write a program for transmission line parameter calculation (Z, Y, A, B, C, D).
CO4	Write a program for load flow solution by Gauss Seidal Method.
CO5	Write a program for load flow solution by Newton Raphson Method.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	3								1	1	3
CO2	3	2	2	3	3								1	1	3
CO3	3	2	2	3	3								1	1	3
CO4	3	2	2	3	3								1	1	3
CO5	3	2	2	3	3								1	1	3
	3.0	2.0	2.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	3.0

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Department of Electrical & Electronics Engineering

Course: B.Tech
Sem/Year: VI/III

Sub: Digital Signal Processing Lab
Sub_Code: C025624(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Write a program to generate the basic Analog and Discrete Signals.
CO2	Write a program to plot Fourier Transform amplitude spectrum and phase spectrum for a given function.
CO3	Write a program to plot frequency response in Z-domain for the given transfer function.
CO4	Write a program for linear convolution of two sequences.
CO5	Write a program for circular convolution.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	3	3								2	2	3
CO2	3	2	2	3	3								2	2	3
CO3	3	2	2	3	3								2	2	3
CO4	3	2	2	3	3								2	2	3
CO5	3	2	2	3	3								2	2	3
	3.0	2.0	2.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	3.0

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Department of Electrical & Electronics Engineering

Course: B.Tech
Sub: Digital Signal Processing
Sem/Year: VI/III
Sub_Code: C025613(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Design digital IIR filters by designing prototypical analog filters and then applying analog to digital conversion techniques such as the bilinear transformation.
CO2	Design digital FIR filters using the window method.
CO3	Use a computer to design digital filters via the frequency sampling approach and the Remez exchange Algorithm.
CO4	Implement digital filters in a variety of forms: direct form I and II, parallel, and cascade, and then analyze their sensitivity to finite precision effects such as input quantization, coefficient quantization, and multiplication round-off.
CO5	Analyze signals using the discrete Fourier transform (DFT).

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	2	3								1	3	3
CO2	3	2	3	2	3								1	3	3
CO3	3	2	2	1	3								1	3	3
CO4	3	2	3	3	3								1	3	3
CO5	3	2	3	3	3								1	3	3
	3.0	2.0	2.8	2.2	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	3.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Electrical Power System-II Lab

Sem/Year: VI/III

Sub_Code: C025622(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Study of the effect of load angle δ on the stability of synchronous machines.
CO2	Determine the phase sequence of a three phase supply by static method.
CO3	Determine vector group (Dy1) of a three phase transformer.
CO4	Determine zero sequence impedance and currents for different connections of a three phase transformer.
CO5	Determine fault current in case of three phase fault on a power system.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	2	3								1	3	1
CO2	3	2	3	2	3								1	3	1
CO3	3	2	3	2	3								1	3	1
CO4	3	2	3	2	3								1	3	1
CO5	3	2	3	2	3								1	3	1
	3.0	2.0	3.0	2.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	1.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Electrical Power System-II

Sem/Year: VI/III

Sub_Code: C025612(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Student should be able to make a one line representation of Power System.
CO2	Student should be able to evaluate fault currents for different faults at different locations in Power System.
CO3	Students should be able to identify cases of stable and unstable Power Systems.
CO4	Understand Power System stability, Load flow studies and economic power dispatch.
CO5	Understand the basic theory of transmission line modeling and their performance analysis.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	1	1	2	2			1					2	1	3
CO2	3	1	1	2	2			1					2	1	3
CO3	3	1	1	2	2			1					2	1	3
CO4	3	1	1	2	2			1					2	1	3
CO5	3	1	1	2	2			1					2	1	3
	3.0	1.0	1.0	2.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	2.0	1.0	3.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Power Electronics lab

Sem/Year: VI/III

Sub_Code: C025621(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To study and plot the V-I characteristics of an SCR.
CO2	To study and plot the drain characteristics of a MOSFET.
CO3	To study and plot the drain characteristics of a IGBT.
CO4	To study single-phase half-wave bridge controlled rectifier for R and RL load.
CO5	To study single-phase full-wave bridge controlled rectifier for R and RL load with and without freewheeling diode.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	2	2	2								3	2	3
CO2	3	3	2	2	2								3	2	3
CO3	3	3	2	2	2								3	2	3
CO4	3	3	2	2	2								3	2	3
CO5	3	3	2	2	2								3	2	3
	3.0	3.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.0	3.0

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Department of Electrical & Electronics Engineering

Course: B.Tech

Sub: Power Electronics

Sem/Year: VI/III

Sub_Code: C025611(025)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To gain knowledge of various application of semiconductor switches by understanding their static and dynamic characteristics.
CO2	To understand the performance characteristics of controlled AC-DC converters for R, RL & RLE loads.
CO3	To gain knowledge on basic DC-DC converters and their operation under continuous /discontinuous mode of conduction for RLE loads
CO3	To identify and formulate the requirements for four quadrant operation of DC motor.
CO4	To differentiate and understand the significance of various commutation circuits and their consequence on device stress

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	2									3	2	3
CO2	3	3	3	2									3	2	3
[illegible]	3	3	3	2									3	2	3
CO4	3	3	3	2									3	2	3
CO5	3	3	3	2									3	2	3
	3.0	3.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.0	3.0

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Department of Electronics & Telecommunication Engineering

Course: B.Tech
Sem/Year: V/III

Sub: Computer Networks
Sub_Code: C028531(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understand the working of internet based on OSI model and TCP/IP protocol suite.
CO2	Students will be able to analyze practical requirements of LAN on the basis of various topologies , signaling techniques and various interfaces.
CO3	Students will have deep understanding of various protocols usedat Data Link Layer and will be able to analyze the advantages and disadvantages of various available protocols for flow and error control.
CO4	Students will be able to analyze various Ethernet standards ,other standards and will be able to choose an appropriate standard according to requirement of LAN.
CO5	Students will be able to identify various internetworking devices and formation of Headers of IP and TCP.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2												3	
CO2	3	2												3	
CO3	3	2	2											2	
CO4	3	2	2											2	
CO5	3	2	2	2										3	
	3	2												3	

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: Control Systems

Sem/Year: V/III

Sub_Code: C028514(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Model physical control systems using BDRT, SFG
CO2	Analyze feedback characteristics and time response analysis of P, PI, and PD & PID Controllers.
CO3	Analyze the stability of control system in time domain using Routh- Hurwitz and Root-locus techniques.
CO4	Analyze the stability of control system in frequency domain using Polar plots, Bode plots and Nyquist Plots.
CO5	Analyze and design the state model of feedback controllers.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3										3	2	3
CO2	3	3	3										3	2	3
CO3	3	3	3										3	2	2
CO4	3	3	3										3	2	2
CO5	3	3	3										3	2	2
	3.0	3	3										3	2	2.4

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: Design of Electronics Circuit lab

Sem/Year: V/III

Sub_Code: C028522(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To design and application of Inverting and non inverting amplifier using op-amp (741)
CO2	To design Integrator, Differentiators and Comparator Ckt various filters using op-amp (741)
CO3	To design various filters using op-amp (741)
CO4	To design and application Multi Vibrator using 555 Timer
CO5	To Design ADC and DAC

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	3	3	2	3						1		3	3	3
CO2	3	2	3	2	3						1		2	3	3
CO3	2	3	3	2	3						1		3	1	2
CO4	2	2	2	3	3						1		2	3	3
CO5	2	2	2	3	3						1		2	3	3
	2.4	2.4	2.6	2.4	3								2.4	2.6	2.8

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: Design of Electronics Circuit

Sem/Year: V/III

Sub_Code: C028512(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Analyze and design differential amplifiers used in linear integrated circuits. Infer the DC and AC characteristics of operational amplifiers and its effect on output.
CO2	Explain operational amplifier application
CO3	Gain knowledge about Active filters
CO4	Get knowledge about 555 timer
CO5	Analyze and design analog to digital converters & digital to analog converters

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2									3	3	3
CO2	3	2	3	2									2	3	3
CO3	2	3	3	2									3	1	2
CO4	2	2	2	3									2	3	3
CO5	2	2	2	3									2	3	3
	2.4	2.4	2.6	2.4									2.4	2.6	2.8

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Department of Electronics & Telecommunication Engineering

Course: B.Tech
Sem/Year: V/III

Sub: Digital Communication Lab
Sub_Code: C028521(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Analyze various Digital modulation and demodulation schemes .
CO2	Apply different types of measuring instruments including advance instruments like spectrum analyzer and digital storage oscilloscope for signal analysis.
CO3	Design and analysis demodulator circuit.
CO4	Measure and compute distortion of the demodulated output of an AM signal.
CO5	Measure and compute the Multiplexing signal.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	3	3						2		3	3	3
CO2	2	2	3	3	3						2		2	3	3
CO3	3	2	2	2	3						2		3	3	2
CO4	2	2	3	3	2						2		2	2	2
CO5	3	2	2	2	2						2		2	2	2
	2.6	2	2.6	2.6	2.6						2		2.4	2.6	2.4

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: Digital Communication

Sem/Year: V/III

Sub_Code: C028511(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Describe the basic elements of a digital communications system
CO2	Analyze various methods of baseband & bandpass digital transmission and detection techniques.
CO3	Implement pulse analog system for digital transmission.
CO4	Analyze performance objectives of digital modulation techniques.
CO5	Gain knowledge of spread spectrum modulation

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	1	3	1									3	3	3
CO2	3	2	3	3									2	3	3
CO3	3	2	2	1									3	3	2
CO4	3	2	3	3									2	2	2
CO5	3	2	2	1									2	2	2
	3.0	1.8	2.6	1.8									2.4	2.6	2.4

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Course: B.Tech **Sub:** Microcontroller & Embedded systems Lab

Sem/Year: V/III **Sub_Code:** C028523(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To understood assembly language program for Addition ,Subtraction etc
CO2	Assembly language program for data transfer from various types of memory`
CO3	Assembly language program for Timer operation
CO4	Assembly language program for Serial Communication
CO5	Assembly language program for code conversion

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2						1		3	2	3
CO2	3	2	3	2	3						3		2	3	3
CO3	3	2	3	2	3						3		3	3	3
CO4	3	2	3	2	3						3		2	3	3
CO5	3	2	3	2	3						3		2	3	3
	3.0	2	2.8	2	2.8						2.6		2.4	2.8	3

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Department of Electronics & Telecommunication Engineering

Course: B.Tech
Sub: Microcontroller & Embedded System
Sem/Year: V/III
Sub_Code: C028513(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To understand Microcontroller 8051 its architecture and its instruction set.
CO2	Gain knowledge about Counter/timer and interrupts in 8051 Microcontroller and Programming concepts.
CO3	Students will be able to do serial communication programming and gain knowledge of serial communication.
CO4	Students will be able to understand interfacing Microcontroller 8051 with devices.
CO5	Students will be able to understand interfacing Microcontroller 8051 with devices.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	1	1	1										3	3	3
CO2	1	3	1	1	3								2	3	3
CO3	3	2	2	1	3								3	1	2
CO4	2	2	3	2									2	3	3
CO5	3	2	3	2									2	3	3
	2.0	2	2	1.5	3								2.4	2.6	2.8

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: PROJECT-I Lab

Sem/Year: V/III

Sub_Code: C028524(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understand the practical implementation of new technques and languages.
CO2	Students will be able to identify and present the objective and the work done during training.
CO3	Students will be able to apply the learned concept through design, analysis and development of mini project.
CO3	Students will be able to design and implementation of mini project during their training.
CO4	Students will be able to discuss the result/output and prepare a mini project report.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	2	2								3	3	3
CO2	3	2	2	2	2	2		2	2		2	2	3	3	3
CO3	3	2	2	2	2	2		2	2		2	2	3	3	3
CO4	3	3	3	2	2	2		2	2		2	2	3	3	3
CO5	3	3	2	3	2								3	3	3
	3.0	2.4	2.2	2.2	2	2		2	2		2	2	3	3	3

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Department of Electronics & Telecommunication Engineering

Course: B.Tech **Sub:** Artificial Intelligence & Machine Learing

Sem/Year: VI/III **Sub_Code:** C028614(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the basic principles of AI towards problem solving and perception.
CO2	Understand the basic principles of Knowledge representation and inference.
CO3	Acquire basic proficiency in a traditional AI language including an ability to write simple to intermediate programs and an ability to understand code written in that language.
CO4	Experiment with a machine-learning model for simulation of intelligent systems in NLP systems and Planning Problems.
CO5	Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural Networks and other machine learning models.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2								2	2	2	2
CO2	2	2	2	2								2	2	2	2
CO3	2	2	2	2								2	2	2	2
CO4	2	2	2	2	2							2	2	2	2
CO5	2	2	2	2	2							2	2	2	2
	2.0	2	2	2	2							2	2	2	2

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Department of Electronics & Telecommunication Engineering

Course: B.Tech
Sub: Antenna & Wave Propagation
Sem/Year: VI/III
Sub_Code: C028612(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to understand the guided and unguided wave propagation.
CO2	Students will acquire knowledge of Basic antennas, their radiation and characteristics.
CO3	Students will knowledge of antenna arrays and their design.
CO4	Students will able to understand some different practical antennas.
CO5	To study uniform plane wave propagation in different media and wave polarization

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	2	2								2	2	2
CO2	3	2	3	2	2								2	2	3
CO3	3	2	3	2	2								2	2	2
CO4	3	2	3	2	2								2	2	3
CO5	3	2	3	2	2								2	2	2
	3.0	2	3	2	2								2	2	2.4

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: Digital Signal Processing Lab

Sem/Year: VI/III

Sub_Code: C028622(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To generate the basic Analog and Discrete Signals.
CO2	To plot Fast Fourier Transform (amplitude & phase).
CO3	Design & implementation of FIR/ IIR filters[LPF,HPF,BPF,BSF]
CO4	To design various filters using Simulink.
CO5	DFT Implementation for a given signal.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	2	2	2						2		3	2	3
CO2	3	2	3	2	3						2		2	2	3
CO3	3	2	3	2	2						2		3	2	3
CO4	3	2	3	2	3						2		2	2	3
CO5	3	2	3	2	3						2		3	2	3
	3.0	2	2.8	2	2.6						2		2.6	2	3

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Course: B.Tech

Sub: Digital Signal Processing

Sem/Year: VI/III

Sub_Code: C028613(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Synthesize discrete time signals from analog signal.
CO2	Use time domain and frequency domain analysis tools.
CO3	Apply forward and Reverse Transformation.
CO4	Visualize various applications of DSP and explore further possibilities.
CO5	Design IIR and FIR filters

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	2	2								3	2	3
CO2	2	2	2	2	3								2	2	3
CO3	2	2	2	2	2								3	2	3
CO4	2	2	2	2	3								2	2	3
CO5	2	2	3	2	3								3	2	3
	2.0	2	2.4	2	2.6								2.6	2	3

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: Information Theory and coding

Sem/Year: VI/III

Sub_Code: C028631(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students will be able to analyze source coding techniques like the Huffman encoding, Shannon Fano encoding , Lempel Ziv encoding and Run Length encoding.
CO2	Students will be able to categorize different types of channels and can determine capacity of a given channel.
CO3	Students will be able to encode and decode using Block codes and Cyclic codes
CO4	Students will be able to use graphical method ,polynomial and polynomial matrix to describe convolutional codes.
CO5	Students will be able to use the mathematical tools developed including primitive element to study BCH codes, and can draw tanner graph of LDPC codes.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	2									3	3	3
CO2	3	2	3	2									2	3	3
CO3	3	2	3	2									3	3	2
CO4	3	2	3	2									2	2	2
CO5	3	2	3	2									2	2	2
	3.0	2	3	2									2.4	2.6	2.4

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: Machine Learning Lab

Sem/Year: VI/III

Sub_Code: C028623(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Understand the implementation procedures for the machine learning algorithms
CO2	Design Java/Python programs for various Learning algorithms.
CO3	Apply appropriate data sets to the Machine Learning algorithms
CO4	Identify and apply Machine Learning algorithms to solve real world problems
CO5	K-means clustering implementation using tool.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3		3								2	2	2
CO2	3	3	3		3								2	2	2
CO3	3	3	3		3								2	2	2
CO4	3	3	3		3								2	2	2
CO5	3	3	3		3								2	2	2
	3.0	3	3		3								2	2	2

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Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: Soft Computing lab

Sem/Year: VI/III

Sub_Code: C028624(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Explore methods that implements neural network techniques
CO2	Practice the fuzzy set relations using different operations
CO3	Design Regression techniques for a set of data points
CO4	Capture an appropriate classification model for analytical tasks
CO5	Implement best practices and techniques for computing efficiently

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3		3						2		2	2	2
CO2	3	3	3		3						2		2	2	2
CO3	3	3	3		3						2		2	2	2
CO4	3	3	3		3						2		2	2	2
CO5	3	3	3		3						2		2	2	2
	3.0	3	3		3						2		2	2	2

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RAIPUR INSTITUTE OF TECHNOLOGY
CHHATAUNA, MANDIR MARG, RAIPUR (C.G.)

RAIPUR INSTITUTE OF TECHNOLOGY

(Under the aegis of Mahanadi Education Society)
Approved by AICTE, New Delhi, Affiliated to CSVTU, Bhilai

SINCE 1995
RITEE

Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: VLSI Design lab

Sem/Year: VI/III

Sub_Code: C028621(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	To Study Architecture of FPGA and CPLD
CO2	To Design 4:1 Multiplexer using all types of Modeling and Implementation in CPLD
CO3	To Design Sequence Detector using Moore and Malay Machine
CO4	To Prepare and Verify the Layout for NOT, NOR and NAND Gates.
CO5	To Prepare the Layout for Various -FF.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3	2	3						2		3	2	3
CO2	3	2	3	2	3						2		3	2	2
CO3	3	2	3	2	3						2		3	2	3
CO4	3	2	3	2	3						2		3	2	2
CO5	3	2	3	2	3						2		3	2	3
	3.0	2	3	2	3						2		3	2	2.6

Faculty

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SINCE 1995
RITEE

Department of Electronics & Telecommunication Engineering

Course: B.Tech

Sub: VLSI design

Sem/Year: VI/III

Sub_Code: C028611(028)

CO-Statement & CO-PO Mapping

Course Outcomes:

CO1	Students are expected to understand CMOS fabrication details.
CO2	Students are expected to understand schematic, layout of combinational circuits.
CO3	Students are expected to understand VHDL programming concepts.
CO3	Students are expected to understand schematic, layout of sequential circuits.
CO4	To understand the layout design of few combinational and sequential circuits.

CO- PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02	PSO3
CO1	3	2	3		3								3	2	3
CO2	3	2	3		2								3	2	2
CO3	3	2	3		2								3	2	3
CO4	3	2	3		3								3	2	2
[illegible]	3	2	3		3								3	2	3
	3.0	2	3		2.6								3	2	2.6

Faculty

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