JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE	**JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE** **JECRC Campus, Shri Ram Ki Nangal, Via-Vatika, Jaipur**	**Academic Year: 2024-25**

Department of Information Technology

Program Outcomes

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

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

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations using IT.

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

5. 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 in IT.

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

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

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

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

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

11. Project Management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage IT projects and in multidisciplinary environments.

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

PSO-Program Specific Objectives

PSO1: Ability to interpret and analyze network specific and cyber security issues, automation in real word environment.

PSO2: Ability to apply the knowledge of cloud computing, artificial intelligence, machine learning and deep learning under realistic constraints.

3rd Semester Subjects

Subject: Advanced Engineering Mtahematics **Code:** 3IT2-01

CO 1	To learn the concepts and principles of Random variables and Probability distribution
CO 2	To learn the formulation of different mathematical problems into optimization problems.
CO 3	Apply the principles of optimization using differential calculus.
CO 4	To understand the concepts of Linear Programming.

Subject: Managerial Economics and Financial Accounting **Code:** 3IT1-03

CO 1	To understand the basic concepts of economics
CO 2	To understand the relation between demand and supply
CO 3	To learn the concepts of production cost analysis and market supply strategies
CO 4	To understand thefinancial statement analysis

Subject: Digital Electronics **Code:** 3IT3-04

CO 1	Solve the basic problems of digital electronics related to number system and Boolean algebra.
CO 2	Learn the concept of minimization techniques for simplifying the Boolean Expressions
CO 3	The ability to understand, analyze and design various combinational circuits.
CO 4	The ability to understand, analyze and design various sequential circuits.

.

Subject: Data Structures & Algorithms **Code:** 3IT4-05

CO 1	To impart the basic concepts of stack data structure and its applications.
CO 2	To understand basic concepts of queue and linked lists
CO 3	To use advanced data structures such as balanced tree, B-Tree and AVL Tree
CO 4	To solve problems using fundamental graph algorithms

.

Subject: Object Oriented Programming **Code:** 3IT4-06

CO 1	To understand the basic principles of Object Oriented Programming.
CO 2	To Apply the concepts of class, method, constructor and instance.
CO 3	To Understand and apply the principles of inheritance and polymorphism.
CO 4	To develop programming skills of undergraduate students to solve basic real world problems using objective oriented programming techniques

Subject: Software Engineeering **Code:** 3IT4-07

CO 1	To study fundamental concepts in software engineering, SDLC, software requirements specification, formal requirements specification and verification.
CO 2	To study basic concepts of object-oriented design using UML, function-oriented software design. Design pattern and user interface design.
CO 3	To study the basic techniques for improving quality of software
CO 4	To understand the fundamental principles of Software Project management estimation model & will also have a good knowledge of responsibilities of project manager and how to handle these.

Subject: Data Structures & Algorithms lab **Code:** 3IT4-21

CO 1	To perform operations on data structures such as insertion, deletion, traversing, displaying, sorting etc.
CO 2	To demonstrate the application of software engineering principles in coding and testing of different programs.
CO 3	To apply essential data structures such as linked lists, stacks, queues, trees and graphs and their applications
CO 4	To know the systematic approaches of various algorithms and then implement in a program.

.

Subject: Object Oriented Programming lab **Code:** 3IT-22

CO 1	Understand the features of C++ supporting object oriented programming
CO 2	To apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism
CO 3	Design solutions for real time problems using features of object oriented programming.

.

Subject: Software Engineering Lab **Code:** 3IT4-23

CO 1	To analysis and design of SRS documents, ERD, DFD etc. and OOD using UML for software systems and meet, legal Responsibilities.
CO 2	To understand the different design techniques, methodologies, and their implementation using CASE tool.
CO 3	Ability to select suitable software development process model for the given project scenario.

CO 4	To produce efficient, reliable, robust and cost-effective software project solutions and perform team work /independent research and analysis.

Subject: Digital Electronics Lab **Code:** 3IT4-24

CO 1	To verify the truth tables of basic logic gates .
CO 2	To realize various combinational circuits and to verify their truth table.
CO 3	To realize various sequential circuits and to verify their truth table.

Subject: Industrial Training **Code:** 3IT7-30

CO 1	To extend the boundaries of knowledge through research and development and integrate classroom theory with workplace practice.
CO 2	To develop new or advanced skills and Gain understanding of administrative functions and company culture.
CO 3	Ability to obtain and apply important principles of science and engineering.And for self-improvement through constant professional development and life-long learning.
CO 4	Ability to recognize, express and model problems and find engineering solution based on a systems tactic.

4th sem Subjects

Subject: Discrete Mathematics Structures **Code:** 4IT2-01

CO 1	Understand the concepts of Sets, Relations, Functions and their Operations
CO 2	Learn the concept of Propositional Logic and Finite State Machines
CO 3	Discuss and develop the Posets, Hasse Diagram, Lattices and Combinatorics
CO 4	Use and apply the concept of Algebraic Structures, Groups, Rings and Graph Theory

Subject: Technical Communication **Code:** 4IT1-02

CO 1	able to express themselves better in technical writing by understanding the concept, style and methodology used in Technical communication.
CO 2	able to pursue higher studies by working on all aspects of English Language and also develop a better understanding of process and design of technical texts.
CO 3	able to get an in depth knowledge of technical communication used in professional life by getting to know all the forms and aspects of Technical Communication.

Subject: Managerial Economics and Financial Accounting **Code:** 4IT1-03

CO 1	To understand the basic concepts of economics
CO 2	To understand the relation between demand and supply
CO 3	To learn the concepts of production cost analysis and market supply strategies
CO 4	To understand thefinancial statement analysis

Subject: Principle of Communication **Code:** 4IT3-04

CO 1	CO1 Introduction of basic techniques of modulation .
CO 2	CO2 study of basic techniques of time and frequency division multiplexing.
CO 3	CO3:Analysis of pulse code modulation and delta modulation.
CO 4	CO4:Study of digital and spread spectrum modulation.

Subject: Dtabase Management System **Code:** 4IT4-05

CO 1	To Analyze the basic structure of Database and recognize the different views of the database.
CO 2	To understand functional dependency and apply various normalization techniques.
CO 3	To analyze the concepts of basic transaction processing.
CO 4	To understand concurrency control protocols and identify the recovery techniques.

Subject: Thoery of Computation **Code:** 4IT4-06

CO 1	Able to design and understand and basic properties of DFA & NDFA and formal languages and formal grammars.
CO 2	Able to understand the relation between types of languages and types of finite automata and the Context free languages and grammar's, and also Normalizing CFG
CO 3	Able to design & understand the minimization of deterministic and nondeterministic finite automata & the concept of Pushdown automata and its application.
CO 4	Able to understand basic properties of Turing machines and computing with Turing machines and concepts of tractability and decidability, the concepts of NP-completeness and NP-hard Problem, the challenges for Theoretical Computer Science and its contribut

Subject: Data Communication And Networks **Code:** 4IT4-07

CO 1	Understand & explain the concept of data communication & networks ,layered architecture & their applications along with data link layer flow control techniques
CO 2	Evaluate data communication link considering elementary concepts of data link layer protocols for error detection & correction .Also Analyze of different Medium access control protocols.
CO 3	Evalute different Network layer protocols and Transport layer Protocols
CO 4	Understand and design application layer protocols and internet applications such Http, SMTP, Ftp, network security, Email and DNS.

Subject: Linux Shell Programming **Code:** 4IT4-21

CO 1	To implement and use basic unix commands
CO 2	To write shell script programs to solve problems
CO 3	To implement some standard Linux utilities such as ls.cp etc using system calls.
CO 4	To develop network based applications.

Subject: DBMS Lab **Code:** 4IT4-22

CO 1	Design and implement a database schema for given problem
CO 2	Formulate queries using SQL DML/DDL/DCL commands.
CO 3	Apply the normalization techniques for development of application software to realistic problems

Subject: Network Programming Lab **Code:** 4IT4-23

CO 1	To identify the Basics of Networking components and tehir installation in Practical Lab
CO 2	To Implement the programs for various algorithms of networking like: Flow control, Error correction etc.
CO 3	To implemet the program for understand the TCP-UDP protocols using Socket programming
CO 4	To implemet the program for understand the Remote procedure calls

Subject: Java Lab **Code:** 4IT4-24

CO 1	List and use Object Oriented Programming concepts for problem solving
CO 2	Write programs using Java collection API as well as the java standard class library.
CO 3	Solve the inter-disciplinary applications using the concept of inheritance.

CO 4	Apply JDBC to provide a program level interface for communicating with database using java programming.

Subject: 4IT4-25 Web Technology Lab **Code:** 4IT4-25

CO 1	Students will be able Demonstrate an understanding of Web Development Lab.
CO 2	Demonstrate proficiency in using web site design and development according to Market demand.
CO 3	Students will be able to apply conceptual skills of Web Site Design and Development of Different modern and efficient tool.

5 Semester Subjects

Subject: Microprocessor & Interfaces **Code:** 5IT3-01

CO 1	Describe the architecture and organization of microprocessor along with instruction set format.
CO 2	Describe the Architecture of Intel 8085 microprocessor and its peripheral devices.
CO 3	Identify simple arithmetic assembly language programs for microprocessor applications for looping, Stack and subroutine and to design of counters and time delay units
CO 4	To describe the impart knowledge about various interfacing devices using microprocessor

Subject: Compiler Design **Code:** 5IT4-02

CO 1	To understand phases of compiler and identify tokens with the help of Lexical Analyzer
CO 2	To apply algorithms for designing of top-down and bottom parsers for a given Context Free Grammar and construct the syntax tree.
CO 3	To analyze and select suitable parsing strategies for a compiler for various cases, code optimization.
CO 4	To understand how the parse trees are generated, errors are handled, symbol table, DAG and code is optimized.

Subject: Operating System **Code:** 5IT4-03

CO 1	To explain the fundamentals of Operating System,Its architecture and its various application fields.
CO 2	To compare the functioning of operating system includes various management systems, synchronization, memory classification etc.
CO 3	To identify the various algorithms and hardware functioning related to operating system.
CO 4	To identify the working and features of new Operating systems.

Subject: Computer Graphics & Multimedia **Code:** 5IT4-04

CO 1	To understand the basic concepts, importance, applications of Computer Graphics also to understand working principle of display devices.
CO 2	To Interpret mathematical foundation to learn graphics algorithms to draw various shapes such as line, circle, ellipse, and curves on raster scan systems.
CO 3	To Apply methods for modeling 2-D and 3-D objects such as transformation, clipping , viewing and rendering techniques
CO 4	To identify animation sequences, as well as recursively defined curves such as Koch curves, C curves and many more

Subject: Analysis of Algorithms **Code:** 5IT4-05

CO 1	Students would be able to describe, apply and analyze the complexity of certain divide and conquer method, greedy method.
CO 2	Students would be able to identify and analyze criteria and specifications appropriate to new problems of dynamic programming and branch and bound, pattern matching algorithms and assignment problem
CO 3	Students would be able to describe the Randomized algorithms, classes P, NP, and NP-Complete and be able to prove that a certain problem is NP-Complete.
CO 4	Students would be able to identify and analyze criteria and specifications appropriate to new problems of Pattern Matching

.

Subject: Software Testing & Project Management **Code:** 5IT5-12

CO 1	Apply the concept of Software Project Management in Real World Scenario and Analyze and estimate Software in terms of Cost and Efforts.
CO 2	Apply the concept of Black Box Testing & White Box Testing in Software Project Management.
CO 3	Apply Object Oriented Concepts in Software Testing
CO 4	Design Test Cases using UML, GUI and Object Oriented Testing Method.

Subject: Computer Graphics & Multimedia Lab **Code:** 5IT4-21

CO 1	Design Graphical User Interface.
CO 2	Develop graphics based softwares.
CO 3	Create Animations.
CO 4	Apply 2D and 3D transformations.

Subject: Compiler Design Lab **Code:** 5IT4-22

CO 1	Design Lexical analyzer for given language using C and LEX tools.
CO 2	Design and convert BNF rules into YACC form to generate various parsers
CO 3	Generate machine code from the intermediate code forms
CO 4	Implement Symbol table

Subject: Analysis of Algorithms Lab **Code:** 5IT4-23

CO 1	To Design and development of Divide and conquer strategy.
CO 2	To Design and development of dynamic programming algorithm.
CO 3	To Design and development of pattern matching algorithm.
CO 4	To Design and development of P and NP algorithm.

.

Subject: Advanced Java lab **Code:** 5IT4-24

CO 1	To develop a deep understanding of JAVA programming and development.
CO 2	To design and develop GUI applications using SWING and event handling.
CO 3	To identify how to access database through Java programs, using java database connectivity (JDBC).
CO 4	To design and create WebPages using JAVA servlets and JSP.

.

Subject: Industrial Training **Code:** 5IT7-30

CO 1	To extend the boundaries of knowledge through research and development and integrate classroom theory with workplace practice.
CO 2	To develop new or advanced skills and Gain understanding of administrative functions and company culture.
CO 3	Ability to obtain and apply important principles of science and engineering.And for self-improvement through constant professional development and life-long learning.
CO 4	Ability to recognize, express and model problems and find engineering solution based on a systems tactic.

6th Sem Subjects

Subject: Digital Image Processing **Code:** 6IT3-01

CO 1	Execute the fundamental aspects of image processing viz. acquisition, recognition and representation.
CO 2	Apply the mathematical foundations of coloring and image enhancement in spatial and frequency domains.
CO 3	Implement filters in image restoration against various types of noise.
CO 4	Analyze various coding algorithms used in image compression.

Subject: Machine Learning **Code:** 6IT4-02

CO 1	Understand types, applications and scope of machine learning techniques.
CO 2	Classify and analyse data using machine learning techniques.
CO 3	Identify frequent patterns from database; and be able to integrate machine learning libraries, mathematical and statistical tools with modern technologies to solve real world problems.
CO 4	Apply reinforcement learning methods to evaluate policy as well as to understand the role of recommendation engine to solve business problems; also be able to create good understanding about neural network and deep learning.

Subject: Information Security System **Code:** 6IT4-03

CO 1	To understand the elementary technical terminology of Cryptography & Network Security.
CO 2	To apply the knowledge for understanding the various encryption & decryption algorithms.
CO 3	To identify the standard algorithms used to provide the confidentiality, integrity & authenticity of data.
CO 4	To apply the knowledge in designing the various security applications in the field of information technology.

Subject: Computer Architecture & Organization **Code:** 6IT4-04

CO 1	To identify the major component of computer including CPU, memory, and I/O in Computer Architecture.
CO 2	1. To describe the fundamentals of computer architecture and their relationship to CPU Designs.
CO 3	1. To analyze the operation of modern CPUs including pipelining, memory systems, buses & instruction of CPU.
CO 4	To discuss the techniques used by advanced computer architecture to communicate with I/O devices

Subject: Artificial Intelligence **Code:** 6IT4-05

CO 1	To understand the concept of AI, problem solving Techniques with using different searching technique .
CO 2	To Understand the concept of Game playing Techniques and Learning process in artificial intelligenc
CO 3	To understand the concepts of knowledge reasoning and learning process in Artificial intelligence
CO 4	To identify the concepts of natural language processing and Expert system, Robotics in AI.

Subject: Distibuted System **Code:** 6IT4-06

CO 1	Understand distributed system concepts and desired properties of such systems
CO 2	Understand and analyze the problems and challenges associated with distributed system.
CO 3	Apply key distributed system properties and evaluate various distributed systems
CO 4	Design and deploy distributed system using various mechanisms

Subject: Cloud Computing **Code:** 6IT5-12

CO 1	Implement the cloud computing architecture i.e, the model, types of clouds, various service models and programming concepts
CO 2	Acquire knowledge about the recent trends in area of cloud computing like Hadoop, programming of Google app engine and virtualization technology and resource management.
CO 3	Identify the various threats related to cloud and as well as disaster recovery related to same.

Subject: Digital Image Processing Lab **Code:** 6IT4-21

CO 1	Develop programs for basic image processing operations.
CO 2	Execute methods to analyze and identify the basic morphological aspects of images viz. Recognition, Representation and Description for Image Evaluation.
CO 3	Perform and evaluate the methodologies for image wavelet/vector quantization, segmentation and compression.
CO 4	Implement image intensity transformations and filtering for the purpose of image enhancement in the spatial and frequency domains.

Subject: Machine Learning Lab **Code:** 6IT4-22

CO 1	Analyse and Interpretation of Data.
CO 2	Design and Create Predictive models.
CO 3	Apply machine learning techniuqes to solve complex engineering problems.
CO 4	Create and Develop research based projects using Deep learning.

Subject: Python Lab **Code:** 6IT4-23

CO 1	Understand and comprehend the basics of python programming.
CO 2	To Implement Conditionals and Loops for Python Program.
CO 3	Students will be able to understand and implement various data structures provided by python library including string, list, dictionary and its operations etc
CO 4	Understands about files to Read and write data from & to files in Python and develop small Application.

Subject: Mobile Apllication Developemnt Lab **Code:** 6IT4-24

CO 1	Students will be able to Develop an in depth understanding of programming in Java2ME.
CO 2	Able to Implement thread concepts through applications.
CO 3	Create high level UI through working on drawing and images.
CO 4	Attain the knowledge of making applications and concepts of authentication with a web server.

Subject: 5G communication Lab **Code:** 6IT4-25

CO 1	To study and understand the concepts and design of a 5G System.
CO 2	To study and Understand Mobile Radio Propagation and Various Digital Modulation Techniques
CO 3	To Understand the Concepts Of Multiple Access Techniques And 5G Wireless Networks
CO 4	To Understand the Concepts of implement design and simulate 5G Network.

7th Semester Subjects

Subject: Big Data Analytics **Code:** 7IT4-01

CO 1	Understand the key issues in big data management and its associated applications and concepts.
CO 2	Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and Hadoop I/O in big data analytics.
CO 3	Understand the Pig programming and scripting like Interfaces scripting, Scripting with Pig Latin.
CO 4	Applying Structure to Hadoop Data with Hive in perspectives of big data analytics in various application.

Subject: Environmental Impact Analysis **Code:** 7CE6-60.1

CO 1	Understand and evaluate create the basicconcept of Environmental impactassessment, Flow of EIA, EIA Product andProcess, Step wise structure of EIA, types ofenvironmental impacts, significance andcriteria for selection. Conceptual SBL.
CO 2	Select methodology for identification ofenvironmental impacts, environmentalindices and indicators
CO 3	Apply the skill and knowledge of predictingimpact of proposed project on air & water;AQI, AQHI, WQI, WQHI
CO 4	To encourage students to develop their own perspectives on impact assessment and to be able to relate this to other subject areas and to their wider understanding..

Subject: Cyber Security Lab **Code:** 7IT4-22

CO 1	Analyze and evaluate the cyber security needs of an organization.
CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.
CO 3	Evaluate best practices in security concepts to maintain confidentiality, integrity and availability of computer systems
CO 4	Practice with an expertise in academics to design and implement security solutions.

Subject: Big Data Analytics Lab **Code:** 7IT4-21

CO 1	To learn installation, tips and tricks for Big Data cases and solutions.
CO 2	To build distributed systems with Apache Hadoop and its programming to nodes
CO 3	To apply Hadoop ecosystem components like HDFS, mapreudce, pig, hive.

Subject: Industrial Training **Code:** 7IT7-30

CO 1	To extend the boundaries of knowledge through research and development and integrate classroom theory with workplace practice.
CO 2	To develop new or advanced skills and Gain understanding of administrative functions and company culture.
CO 3	Ability to obtain and apply important principles of science and engineering.And for self-improvement through constant professional development and life-long learning.
CO 4	Ability to recognize, express and model problems and find engineering solution based on a systems tactic..

Subject: Seminar **Code:** 7IT7-40

CO 1	To extend the boundaries of knowledge through research and development and integrate classroom theory with workplace practice.
CO 2	To develop new or advanced skills and Gain understanding of administrative functions and company culture.
CO 3	Ability to obtain and apply important principles of science and engineering.And for self-improvement through constant professional development and life-long learning.
CO 4	Ability to recognize, express and model problems and find engineering solution based on a systems tactic..

8th Serm Subjects

Subject: Internet of Things **Code:** 8IT4-01

CO 1	To understand the revolution of the internet in the field of cloud, wireless networks, embedded systems and mobile devices.
CO 2	Apply IOT design concepts in various dimensions implementing software and hardware
CO 3	Analyze various M2M and IoT architectures.

CO 4	Design and develop various applications in IoT

Subject: Disaster Management **Code:** 8TT6-60.2

CO 1	To understand disaster management, related issues and preventive measures.
CO 2	To understand and analyze the natural disasters.
CO 3	To analyze various man-made disasters.
CO 4	Evaluate the role of management and people in mitigation of disaster.

Subject: Internet of Things Lab **Code:** 8IT4-21

CO 1	Installed and practical expertise using Raspberry Pi or Arduino with Linux commands and Python Programming
CO 2	Assemble IoT projects using the most popular Raspberry Pi board or Arduino

Subject: Software Testing and Validation Lab **Code:** 8IT4-22

CO 1	Design and construct the manual test cases for different software module.
CO 2	Construct the test cases in automation testing tool.
CO 3	Record the test cases in different mode.
CO 4	Design and construct the test cases for testing program using TSL.

Subject: Project **Code:** 8IT7-50

CO 1	Graduates will be able to understand the concepts of real world complex problems with analysing social impact for sustainable development in IT.
CO 2	Graduates will be able to apply design, development and testing methodologies.
CO 3	Graduates will be able to create cost effective solutions in multidisciplinary environments.
CO 4	Graduates will be able to demonstrate their work with writing effective reports and design documentation via presentation tools.

.

3.1.2. CO-PO matrices of courses selected in 3.1.1 (six matrices to be mentioned; one per semester from 3rd to 8th semester) (05)

3th Semester Subjects

Subject with code	Program Outcomes(POs)												
	POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
3IT1-03	CO-1	1	3	2	3	2	3	3	3	2	2	3	3
	CO-2	3	3	2	2	2	3	2	3	3	2	3	3
	CO-3	3	3	2	2	3	3	2	2	3	2	3	2
	CO-4	3	3	2	2	2	2	2	3	2	2	3	2
3IT2-01	CO-1	3	3	2	1	1	1	1	1	2	2	2	1
	CO-2	3	3	2	1	1	1	1	1	2	2	2	1
	CO-3	3	3	2	1	1	1	1	1	2	2	2	1
	CO-4	3	3	2	3	1	1	1	1	2	2	2	1
3IT4-22	CO-1	3	3	3	2	1	1	1	1	3	2	1	1
	CO-2	3	3	3	1	1	1	1	1	2	1	1	1
	CO-3	3	2	3	1	1	1	1	1	2	1	1	2
3IT4-05	CO-1	3	3	3	1	3	1	1	1	2	2	1	2
	CO-2	3	3	2	2	3	1	3	1	2	3	1	3
	CO-3	3	3	3	3	3	1	3	1	1	3	1	3
	CO-4	3	3	3	2	2	1	2	1	1	2	1	3
3IT4-06	CO-1	3	1	1	1	1	1	1	1	1	1	1	1
	CO-2	3	2	1	1	1	1	1	1	1	1	1	1
	CO-3	3	3	2	2	1	1	1	1	1	1	1	1
	CO-4	3	3	3	2	2	1	1	1	1	1	1	1
3IT4-07	CO-1	3	3	3	3	3	3	1	2	2	2	2	2
	CO-2	3	2	3	3	2	2	2	1	2	3	3	2

	CO-3	3	3	3	3	3	3	2	1	3	2	3	3
	CO-4	3	3	3	3	3	3	2	2	3	2	3	3
3IT4-21	**CO-1**	3	3	1	2	3	1	2	2	3	2	2	3
	CO-2	3	3	1	2	3	1	2	2	2	2	3	2
	CO-3	3	3	1	2	2	1	2	2	2	1	3	3
	CO-4	3	3	1	2	2	1	2	2	3	1	2	2
3IT4-23	**CO-1**	3	3	3	3	3	3	2	2	1	1	2	1
	CO-2	3	3	3	3	3	1	2	1	2	1	2	3
	CO-3	3	3	3	1	1	2	1	2	1	2	3	3
	CO-4	3	3	1	3	2	2	1	1	3	1	3	1
3IT4-24	**CO-1**	3	3	3	1	1	1	1	1	1	1	2	3
	CO-2	2	1	3	1	1	1	1	1	1	1	2	3
	CO-3	3	2	3	2	1	2	2	1	1	2	3	3
	CO-4	2	2	3	2	1	2	1	1	2	2	3	3
3IT7-30	**CO-1**	3	3	3	3	3	2	1	2	2	3	3	2
	CO-2	3	3	2	3	3	2	1	3	2	3	3	2
	CO-3	3	3	3	3	3	3	1	2	2	3	3	3
	CO-4	3	3	3	3	3	3	1	2	2	3	3	2

4th Semester Subjects

Subject with code	**Program Outcomes(POs)**												
	POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
4IT1-02	**CO-1**	1	2	1	3	1	2	3	1	3	3	2	3
	CO-2	1	2	1	3	1	2	3	1	3	3	2	3
	CO-3	1	2	1	3	1	2	3	1	3	3	2	3
	CO-4	1	2	1	3	1	2	3	1	3	3	2	3
4IT2-01	**CO-1**	3	3	3	3	1	1	1	1	1	1	1	2
	CO-2	3	3	2	2	1	1	1	1	1	1	1	2
	CO-3	3	3	2	3	1	1	1	1	1	1	3	2
	CO-4	3	3	2	3	1	1	1	1	1	1	1	2
4IT3-04	**CO-1**	3	3	1	1	1	1	1	1	1	1	1	1
	CO-2	3	3	2	1	1	1	1	1	1	1	1	1
	CO-3	3	3	2	1	1	1	1	1	1	1	1	1
	CO-4	3	3	2	1	1	1	1	1	1	1	1	1
4IT4-05	**CO-1**	3	3	3	1	1	1	1	1	1	2	1	1
	CO-2	3	2	3	1	1	1	1	1	1	2	1	1
	CO-3	3	3	1	1	1	1	1	1	3	2	1	3
	CO-4	3	3	2	1	1	1	1	1	1	2	1	1
4IT4-06	**CO-1**	3	3	3	3	3	1	2	2	1	3	1	3
	CO-2	3	3	3	3	2	3	2	2	1	3	2	1
	CO-3	3	3	3	3	3	2	1	2	2	3	1	3
	CO-4	3	3	3	3	3	3	2	1	1	3	3	3
4IT4-07	**CO-1**	3	3	2	2	3	1	1	1	1	1	1	2
	CO-2	3	2	2	3	3	1	1	1	1	1	1	2
	CO-3	3	3	3	2	3	1	1	1	2	1	1	1
	CO-4	2	2	2	2	3	1	1	1	2	1	1	1

4IT4-21	**CO-1**	3	3	3	2	3	1	1	1	1	2	1	2
	CO-2	3	3	3	2	3	1	3	1	1	3	1	3
	CO-3	3	3	3	2	3	1	3	1	2	3	1	3
	CO-4	3	3	3	2	3	1	2	1	1	2	2	3
4IT4-22	**CO-1**	3	1	1	1	1	1	1	1	2	1	1	1
	CO-2	2	2	3	2	2	1	1	1	1	2	1	1
	CO-3	3	3	1	2	1	1	1	1	2	2	1	1
	CO-4	2	3	2	1	2	1	1	1	2	1	1	1
4IT4-23	**CO-1**	3	1	1	2	2	1	2	1	3	1	1	2
	CO-2	3	3	3	2	2	1	2	1	3	1	1	2
	CO-3	3	3	3	3	3	3	1	2	3	2	1	2
	CO-4	3	3	3	3	3	3	1	2	3	2	1	2
4IT4-24	**CO-1**	3	1	2	1	3	1	1	1	1	2	3	1
	CO-2	1	2	1	3	2	1	1	1	2	1	2	2
	CO-3	3	2	1	3	3	1	1	1	1	2	1	1
	CO-4	2	1	2	3	1	1	1	1	1	1	2	2
4IT4-25	**CO-1**	3	1	3	1	3	1	1	1	1	1	3	1
	CO-2	2	3	1	1	1	3	1	3	1	1	3	2
	CO-3	1	3	2	2	2	2	1	1	3	1	3	1
	CO-4	1	1	1	1	1	1	1	1	1	1	1	1

5th Semester Subjects

Subject with code	**Program Outcomes(POs)**												
	POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
5IT3-01	**CO-1**	3	1	1	1	1	1	1	1	2	1	1	3
	CO-2	3	2	3	2	2	1	1	1	2	1	1	3
	CO-3	3	3	2	2	2	1	1	1	2	1	1	3
	CO-4	3	3	2	2	2	1	1	1	2	1	1	3
5IT4-02	**CO-1**	3	3	3	3	1	2	1	2	3	2	1	1
	CO-2	3	1	3	2	3	1	2	1	1	1	2	3
	CO-3	3	3	3	3	2	1	2	1	1	1	2	3
	CO-4	3	3	3	1	1	2	3	2	2	2	1	1
5IT4-03	**CO-1**	3	2	3	1	1	1	1	1	2	3	1	2
	CO-2	3	3	3	3	2	1	2	1	2	1	1	2
	CO-3	3	1	2	2	1	2	2	1	2	2	1	2
	CO-4	3	2	3	2	1	2	1	1	2	1	1	2
5IT4-04	**CO-1**	3	3	1	1	1	1	1	1	1	1	1	1
	CO-2	3	3	1	1	1	1	1	1	1	1	1	1
	CO-3	3	3	1	3	1	1	1	1	1	1	1	1
	CO-4	3	3	2	1	3	1	1	1	1	1	1	3
5IT4-05	**CO-1**	3	3	3	1	3	1	1	1	2	2	1	2
	CO-2	3	3	2	2	3	1	3	1	2	3	1	3

	CO-3	3	3	3	3	2	1	3	2	1	3	1	3
	CO-4	3	3	3	2	2	1	2	1	1	2	1	3
5IT5-12	**CO-1**	3	3	3	3	3	3	1	2	2	2	2	2
	CO-2	3	3	3	2	2	1	2	1	1	2	1	3
	CO-3	2	3	2	3	1	1	2	1	3	3	3	2
	CO-4	3	3	2	3	2	1	1	1	3	2	3	2
5IT4-21	**CO-1**	3	2	1	1	1	1	1	1	1	1	3	2
	CO-2	3	3	2	2	1	3	1	1	1	1	3	3
	CO-3	1	2	3	3	3	1	1	1	1	1	1	2
	CO-4	1	1	1	2	2	1	2	2	3	1	1	1
5IT4-22	**CO-1**	3	3	1	2	2	1	2	2	3	2	1	2
	CO-2	3	1	2	2	1	2	1	2	1	2	3	1
	CO-3	3	3	2	1	2	1	1	1	2	1	1	1
	CO-4	3	2	1	1	2	2	2	1	3	1	1	2
5IT4-23	**CO-1**	3	3	1	2	3	1	2	2	3	2	2	3
	CO-2	3	3	1	2	3	1	2	2	2	2	3	2
	CO-3	3	3	1	2	2	1	2	2	2	1	3	3
	CO-4	3	3	1	2	2	1	2	1	3	1	2	2
5IT4-24	**CO-1**	3	3	3	2	3	2	2	1	3	1	3	2
	CO-2	3	2	3	2	2	2	1	1	3	1	2	2
	CO-3	3	3	3	2	2	2	1	1	3	1	2	2
	CO-4	3	3	3	2	2	2	1	1	3	1	2	2
5IT7-30	**CO-1**	3	3	3	3	2	2	1	2	3	2	3	3
	CO-2	3	3	2	3	3	2	1	3	2	3	3	2
	CO-3	3	3	3	3	3	3	1	2	2	3	3	3
	CO-4	3	3	3	3	3	3	1	2	2	2	2	2

6th Semester Subjects

Subject with code	**Program Outcomes(POs)**												
	POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
6IT3-01	**CO-1**	3	3	3	2	1	2	2	1	3	3	2	2
	CO-2	3	3	1	1	3	3	1	2	3	2	3	3
	CO-3	3	2	3	2	3	3	3	1	3	2	3	2
	CO-4	3	3	2	3	3	2	2	2	3	2	3	3
6IT4-02	**CO-1**	3	2	2	1	1	1	1	1	1	1	1	1
	CO-2	2	2	1	3	1	1	1	1	1	1	1	1
	CO-3	2	2	2	2	1	1	1	1	1	1	1	1
	CO-4	1	1	1	2	1	1	1	1	1	1	1	1
6IT4-03	**CO-1**	3	2	3	3	1	3	2	3	3	2	2	1
	CO-2	3	3	3	3	1	2	2	3	3	3	2	2
	CO-3	3	3	3	3	3	3	3	3	3	3	2	2
	CO-4	3	3	2	3	3	3	3	3	3	3	2	2
6IT4-04	**CO-1**	3	3	3	1	3	1	1	1	2	2	1	2
	CO-2	3	3	2	2	3	1	3	1	2	3	1	3

	CO-3	3	3	3	3	3	1	3	1	1	3	1	3
	CO-4	3	3	3	2	2	1	2	1	1	2	1	3
6IT4-05	**CO-1**	3	1	2	1	1	1	1	1	1	2	3	2
	CO-2	3	2	1	1	2	1	1	1	1	2	3	1
	CO-3	3	2	1	3	2	1	1	1	1	2	2	1
	CO-4	2	1	2	3	1	1	1	1	2	2	2	2
6IT4-06	**CO-1**	3	2	2	3	1	1	1	1	1	1	2	3
	CO-2	3	2	2	2	1	1	1	1	1	1	3	3
	CO-3	3	2	2	2	2	2	1	1	1	1	3	3
	CO-4	3	2	2	3	2	2	1	1	1	1	3	3
6IT5-12	**CO1**	3	1	1	2	2	2	2	1	2	2	2	1
	CO2	1	2	1	1	2	2	3	1	1	2	1	2
	CO3	3	1	1	2	2	2	2	1	1	2	1	2
	CO4	3	2	1	1	1	2	2	2	2	3	1	2
6IT4-21	**CO-1**	3	3	2	1	3	1	2	3	2	2	3	1
	CO-2	3	1	3	3	2	2	2	1	1	3	3	1
	CO-3	3	3	3	1	1	2	2	2	1	1	3	3
	CO-4	2	2	3	1	1	3	3	3	2	2	3	3
6IT4-22	**CO-1**	3	3	3	3	3	1	1	2	2	1	1	1
	CO-2	3	3	3	3	3	1	1	2	2	1	1	1
	CO-3	3	3	3	3	3	1	1	2	2	1	1	1
	CO-4	3	3	3	3	3	1	1	2	2	1	1	1
6IT4-23	**CO-1**	3	3	2	2	3	1	1	1	1	1	1	2
	CO-2	3	2	2	3	3	1	1	1	1	1	1	2
	CO-3	3	3	3	2	3	1	1	1	2	1	1	1
	CO-4	2	2	2	2	3	1	1	1	2	1	1	1
6IT4-24	**CO-1**	3	3	2	2	3	1	1	1	2	1	1	2
	CO-2	3	2	2	3	3	1	1	1	2	1	1	2
	CO-3	3	3	3	2	3	1	1	1	2	1	1	2

7th Semester Subjects

Subject with code	**Program Outcomes(POs)**												
	POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
7IT4-01	**CO-1**	3	2	2	2	1	1	1	1	1	2	1	1
	CO-2	3	3	3	2	2	1	1	1	2	2	1	3
	CO-3	3	2	2	2	2	2	1	1	1	2	1	2
	CO-4	3	2	2	2	2	1	1	1	1	2	1	3
7CE6-	**CO-1**	2	3	3	2	3	1	3	1	3	1	2	3
	CO-2	1	3	3	3	3	1	2	2	3	3	2	3

60.1	**CO-3**	1	3	3	2	2	1	3	1	3	2	3	2
	CO-4	1	2	3	1	2	2	2	1	1	1	2	2
7IT4-21	**CO-1**	2	3	1	2	1	1	2	1	1	2	1	3
	CO-2	3	2	3	1	3	3	1	1	2	1	2	2
	CO-3	1	1	2	3	1	1	3	2	1	2	2	1
	CO-4	1	3	1	2	2	1	2	3	3	2	3	2
7IT4-22	**CO-1**	2	1	3	2	3	1	1	3	3	2	3	3
	CO-2	3	3	2	2	3	1	3	2	1	3	3	3
	CO-3	1	1	2	2	3	1	3	2	1	3	3	3
	CO-4	3	2	3	2	3	1	2	2	3	3	3	3
7IT7-30	**CO-1**	3	3	3	2	2	2	1	1	2	1	1	3
	CO-2	3	3	3	2	3	2	1	1	3	3	1	3
	CO-3	3	3	3	2	3	3	1	1	2	3	2	3
	CO-4	3	3	3	2	2	3	2	1	2	3	1	3
7IT7-40	**CO-1**	3	3	3	3	3	2	1	1	3	1	2	2
	CO-2	3	3	3	3	3	2	1	1	3	1	2	2
	CO-3	3	3	3	3	3	2	1	1	3	1	3	2
	CO-4	3	3	3	3	3	2	1	1	3	1	3	2

8th Semester Subjects

Subject with code	**Program Outcomes(POs)**												
	POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
8IT4-01	**CO-1**	3	3	2	2	2	2	1	1	2	2	2	3
	CO-2		3	3	3	3	2	1	1	1	2	2	3
	CO-3		2	2	1	2	2	1	1	2	1	1	3
	CO-4		2	3	3	3	2	2	1	3	3	3	3
8TT6-60.2	**CO-1**	1	2	3	2	2	3	1	1	1	1	1	2
	CO-2	1	3	2	2	2	3	3	3	2	1	2	3
	CO-3	2	3	3	2	2	3	3	3	2	2	1	3
	CO-4	2	3	3	2	2	3	3	3	2	2	1	2
8IT4-21	**CO-1**	3	3	3	1	3	1	1	1	2	2	1	2
	CO-2	3	3	2	2	3	1	3	1	2	3	1	3
8IT4-22	**CO-1**	3	2	2	2	2	1	1	1	1	2	1	1
	CO-2	3	3	2	3	3	1	1	1	2	3	1	2
	CO-3	2	3	3	2	2	2	2	1	3	3	1	2
	CO-4	3	3	3	2	3	2	1	1	3	2	1	2
8IT7-50	**CO-1**	3	3	2	1	3	1	2	3	2	2	3	1
	CO-2	3	1	3	3	2	2	2	1	1	3	3	1
	CO-3	3	3	3	1	1	2	2	2	1	1	3	3
	CO-4	2	2	3	1	1	3	3	3	2	2	3	3

MAPPING OF PSO's –CO's

3th Semester Subjects

Subject with Code	CO's	Program Specific Outcomes(PSOs)	
		PSO1	PSO2
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
3IT2-01	CO-4	1	1
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
3IT1-02			
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
	CO-4	1	1
3IT3-04			
	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
3IT4-05	CO-4	2	1
	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
3IT4-06	CO-4	2	1
	CO-1	2	1
	CO-2	2	1
	CO-3	3	1
3IT4-07	CO-4	3	1
	CO-1	2	1
	CO-2	2	1
	CO-3	3	1
3IT4-21	CO-4	3	1
	CO-1	2	1
	CO-2	2	1
3IT-22	CO-3	3	1
	CO-1	2	1
	CO-2	2	1
	CO-3	3	1
3IT4-23	CO-4	3	1
	CO-1	1	1
	CO-2	1	1 1
3IT4-24	CO-3	1	1

	CO-4	1	1
	CO-1	3	1
	CO-2	3	1
	CO-3	3	1
3IT7-30	CO-4	3	1

4th Semester Subjects

Subject with Code	CO's	Program Specific Outcomes(PSOs)	
		PSO1	PSO2
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
4IT2-01	CO-4	1	1
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
4IT1-03	CO-4	1	1
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
4IT3-04	CO-4	1	1
	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
4IT4-05	CO-4	2	1
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
4IT4-06	CO-4	1	1
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
4IT4-07	CO-4	1	1
	CO-1	2	1
	CO-2	2	1
	CO-3	2	1
4IT4-21	CO-4	2	1
	CO-1	2	1
	CO-2	2	1
4IT4-22	CO-3	2	1
	CO-1	2	1
4IT4-23	CO-2	1	1

	CO-3	1	1
	CO-4	2	1
	CO-1	2	1
	CO-2	2	1
	CO-3	3	1
4IT4-24	CO-4	3	1
	CO-1	1	1
	CO-2	1	1
4IT4-25	CO-3	1	1

5th Semester Subjects

Subject with Code	CO's	Program Specific Outcomes(PSOs)	
		PSO1	PSO2
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
5IT3-01	CO-4	1	1
	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
5IT4-02	CO-4	2	1
	CO-1	1	1
	CO-2	2	1
	CO-3	1	1
5IT4-03	CO-4	2	1
	CO-1	2	1
	CO-2	2	1
	CO-3	2	1
5IT4-04	CO-4	2	1
	CO-1	1	1
	CO-2	2	1
	CO-3	2	1
5IT4-05	CO-4	2	1
	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
5IT5-12	CO-4	2	1
	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
5IT4-21	CO-4	1	1
5IT4-22	CO-1	1	1

	CO-2	1	1
	CO-3	1	1
	CO-4	1	1
	CO-1	2	1
	CO-2	2	1
	CO-3	3	1
5IT4-23	CO-4	3	1
	CO-1	2	1
	CO-2	2	1
	CO-3	3	1
5IT4-24	CO-4	3	1
	CO-1	3	1
	CO-2	3	1
	CO-3	3	1
5IT7-30	CO-4	3	1

6th Semester Subjects

Subject with Code	CO's	Program Specific Outcomes(PSOs)	
		PSO1	PSO2
	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
6IT3-01	CO-4	2	1
	CO-1	3	3
	CO-2	2	3
	CO-3	3	3
6IT4-02	CO-4	3	3
	CO-1	2	1
	CO-2	2	1
	CO-3	3	1
6IT4-03	CO-4	3	1
	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
6IT4-04	CO-4	2	1
	CO-1	1	3
	CO-2	1	3
	CO-3	2	3
6IT4-05	CO-4	2	3
	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
6IT4-06	CO-4	2	1
6IT5-13	CO1	1	1

	CO2	1	1
	CO3	1	1
	CO4	1	1
	CO-1	2	1
	CO-2	2	1
	CO-3	2	1
6IT4-21	CO-4	2	1
	CO-1	3	3
	CO-2	3	3
	CO-3	3	3
6IT4-22	CO-4	3	3
	CO-1	3	3
	CO-2	3	3
	CO-3	3	3
6IT4-23	CO-4	3	3
	CO-1	3	3
	CO-2	3	3
	CO-3	3	3
6IT4-24	CO-4	3	3

7th Semester Subjects

Subject with Code	CO's	Program Specific Outcomes(PSOs)	
		PSO1	PSO2
7IT4-01	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
	CO-4	1	1
7CE6-60.1	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
	CO-4	1	1
7IT4-21	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
	CO-4	1	1
7IT4-22	CO-1	2	1
	CO-2	2	1
	CO-3	2	2
	CO-4	2	2
7IT7-30	CO-1	2	1
	CO-2	2	1
	CO-3	3	1
	CO-4	3	1

7IT7-40	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
	CO-4	1	1

8th Semester Subjects

Subject with Code	CO's	Program Specific Outcomes(PSOs)	
		PSO1	PSO2
8IT4-01	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
	CO-4	1	1
8TT6-60.1	CO-1	1	1
	CO-2	1	1
	CO-3	2	1
	CO-4	2	1
8IT4-21	CO-1	2	1
	CO-2	2	1
	CO-3	2	1
	CO-4	2	1
8IT4-22	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
	CO-4	1	1
8IT7-50	CO-1	1	1
	CO-2	1	1
	CO-3	1	1
	CO-4	1	1