LOYOLAINSTITUTEOFTECHNOLOGY
Palanchur,Chennai–600123
ApprovedbyAICTE,NewDelhiandAffiliatedtoAnnaUniversity,Chenn
ai (An ISO Certified Institution)

Department of Information Technology

2017 Regulations

Course Outcomes (COs)

ODD SEM(III)

II YEAR (5 Theory + 4 Labs)

Si. No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	MA8351 DiscreteMathematics	CO1	Haveknowledgeoftheconcepts neededtotestthelogic ofaprogram.
		CO2	Have an understanding in identifying structures on many levels.
		CO3	Beawareofaclassoffunctionswhichtransformafinitesetintoanot herfinitesetwhichrelatestoinputand outputfunctionsin computerscience.
		CO4	Beaware ofthecountingprinciples.
		CO5	Beexposedtoconceptsandpropertiesofalgebraicstructuressucha sgroups,ringsandfields.
		CO6	Study of graphs, vertices, edges, paths, cycles, connectivity, etc
2	CS8351 DigitalPrinciplesand System Design	CO1	Simplify Boolean functions using KMap
		CO2	Design and Analyze Combinational and Sequential Circuits
		CO3	Implement designs using Programmable Logic Devices
		CO4	Write HDL code for combinational and Sequential Circuits
		CO5	Design and analysis of combinational logic circuits, multiplexers, decoders, encoders, etc.
3	CS8391 Data Structures	CO1	Implement abstract data types for linear data structures
		CO2	Apply the different linear and non-linear data structures to problem solutions.
		CO3	Critically analyze the various sorting algorithms.

		CO4	Exploring real-world applications and use cases where advanced data structures are essential.
		CO5	Analyzing the time and space complexities of advanced data structures and algorithms.
		CO6	Designing algorithms that utilize advanced data structures to solve specific problems efficiently.
4	CS8392 Object Oriented Programming	CO1	Develop Java programs using OOP principles
		CO2	Develop Java programs with the concepts inheritance and interfaces
		CO3	Build Java applications using exceptions and I/O streams
		CO4	Develop Java applications with threads and generics classes
		CO5	Develop interactive Java programs using swings
		CO6	Delving deeper into topics like abstract classes, interfaces, generics, and their role in promoting code reusability, maintainability, and flexibility in software development.
5	EC8394 Analog and Digital Communication	CO1	Write functions to implement linear and non-linear data structure operations
		CO2	Apply analog and digital communication techniques.
		CO3	Use data and pulse communication techniques.
		CO4	Analyze Source and Error control coding.
		CO5	Designing and analyzing digital communication systems, including the selection of appropriate modulation schemes, coding techniques, and error control methods.
		CO6	Evaluating the performance of analog and digital communication systems under various conditions.
6	CS8381 Data Structures Laboratory	CO1	Write functions to implement linear and non-linear data structure operations
		CO2	Suggest appropriate linear / non-linear data structure operations for solving a given problem
		CO3	Appropriately use the linear / non-linear data structure operations for a given problem
		CO4	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval
		CO5	: Developing applications or solving computational problems using data structures covered in the laboratory sessions.
		CO6	mini-project that integrates multiple data structures and algorithms to solve a complex problem, demonstrating comprehensive understanding and application of data structures concepts.
7	CS8383 Object Oriented	CO1	Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.
		CO2	Develop and implement Java programs with arraylist, exception handling and multithreading.

	Programming Laboratory	CO3	Design applications using file processing, generic programming and event handling.
		CO4	Understanding and applying common design patterns (e.g., Singleton, Factory, Observer) in practical programming scenarios.
		CO5	Developing graphical user interfaces (GUIs) using OOP principles, possibly utilizing frameworks such as JavaFX or Qt.
		CO6	Integrating object-oriented programming with database systems, implementing CRUD (Create, Read, Update, Delete) operations using OOP languages like Java or C++.
8	CS8382 Digital Systems Laboratory	CO1	Implement simplified combinational circuits using basic logic gates
		CO2	Implement combinational circuits using MSI devices
		CO3	Implement sequential circuits like registers and counters
		CO4	Simulate combinational and sequential circuits using HDL
		CO5	Students may be expected to develop skills in testing digital systems, identifying errors, and debugging their designs effectively.
		CO6	Emphasis may be placed on documenting design processes, results, and conclusions drawn from laboratory experiments.
9	Interpersonal Skills/Listening & speaking	CO1	Listen and respond appropriately.
		CO2	Participate in group discussions
		CO3	Make effective presentations
		CO4	Participate confidently and appropriately in conversations both formal and informal

EVENSEM (IV)

II YEAR (6Theory + 3 Labs)

Si.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	MA8391 Probability and Statistics	CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
		CO2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
		CO3	Apply the concept of testing of hypothesis for small and large samples in real life problems.
		CO4	Apply the basic concepts of classifications of design of experiments in the field of agriculture and statistical quality control.
		CO5	Have the notion of sampling distributions and statistical techniques used in engineering and management problems.
		CO6	Analyzing case studies or engaging in projects that apply probability and statistics concepts to real-world data.
2	CS8491 Computer Architecture	CO1	Understand the basics structure of computers, operations and instructions.
		CO2	Design arithmetic and logic unit.
		CO3	Understand pipelined execution and design control unit.
		CO4	Understand parallel processing architectures.
		CO5	Understand the various memory systems and I/O communication.
		CO6	Techniques for evaluating and optimizing the performance of computer systems.
3	CS8492 Database Management Systems	CO1	Classify the modern and futuristic database applications based on size and complexity
		CO2	Map ER model to Relational model to perform database design effectively
		CO3	Write queries using normalization criteria and optimize queries
		CO4	Compare and contrast various indexing strategies in different database systems

		CO5	Appraise how advanced databases differ from traditional databases.
		CO6	Exploring advanced data models beyond the relational model, such as object-oriented databases, XML databases, and NoSQL databases.
4	CS8451 Design and Analysis of Algorithms	CO1	Design algorithms for various computing problems.
		CO2	Analyze the time and space complexity of algorithms.
		CO3	Critically analyze the different algorithm design techniques for a given problem.
		CO4	Modify existing algorithms to improve efficiency.
		CO5	Applying algorithmic techniques and principles to solve real-world computational problems.
		CO6	Investigating case studies or examples where advanced algorithms have been successfully applied in various domains.
5	CS8493 Operating Systems	CO1	Analyze various scheduling algorithms.
		CO2	Understand deadlock, prevention and avoidance algorithms.
		CO3	Compare and contrast various memory management schemes.
		CO4	Understand the functionality of file systems.
		CO5	Perform administrative tasks on Linux Servers.
		CO6	Compare iOS and Android Operating Systems.
6	GE8291 Environmental Science and Engineering	CO1	Public awareness of environment at infant stage.
		CO2	Ignorance and incomplete knowledge has lead to misconceptions.
		CO3	Development and improvement in standard of living has lead to serious environmental disasters.
		CO4	Implement simple applications that use Views
		CO5	Analyzing sustainability principles and practices in engineering and industrial contexts.
		CO6	Investigating real-world case studies or engaging in projects related to environmental science and engineering.
7	CS8481 Database Management Systems Laboratory	CO1	Use typical data definitions and manipulation commands.
		CO2	Design applications to test Nested and Join Queries
		CO3	Implement simple applications that use Views

		CO4	Implement applications that require a Front-end Tool
		CO5	Critically analyze the use of Tables, Views, Functions and Procedures
		CO6	Implementing advanced database applications or projects that demonstrate the integration of multiple database concepts and techniques.
8	CS8461 Operating Systems Laboratory	CO1	Compare the performance of various CPU Scheduling Algorithms
		CO2	Implement Deadlock avoidance and Detection Algorithms
		CO3	Implement Semaphores
		CO4	Create processes and implement IPC
		CO5	Analyze the performance of the various Page Replacement Algorithms
		CO6	Implement File Organization and File Allocation Strategies
9	HS8461 Advanced Reading and Writing	CO1	Write different types of essays.
		CO2	Write winning job applications.
		CO3	Read and evaluate texts critically.
		CO4	Display critical thinking in various professional contexts

ODD SEM (V)

III YEAR (6 Theory + 3 Labs)

S.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	MA8551 Algebra and Number Theory	CO1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
		CO2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
		CO3	Demonstrate accurate and efficient use of advanced algebraic techniques.
		CO4	Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
		CO5	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.
		CO6	Solve advanced problems in algebra and number theory using appropriate methods and strategies.
2	CS8591 Computer Networks	CO1	Understand the basic layers and its functions in computer networks.
		CO2	Evaluate the performance of a network.
		CO3	Understand the basics of how data flows from one node to another
		CO4	Analyze and design routing algorithms.
		CO5	Design protocols for various functions in the network.
		CO6	Understand the working of various application layer protocols.
3	EC8691 Microprocessors and Microcontrollers	CO1	Understand and execute programs based on 8086 microprocessor.
		CO2	Design Memory Interfacing circuits.
		CO3	Design and interface I/O circuits.
		CO4	Design and implement 8051 microcontroller based systems.
		CO5	Represent web data using XML and develop web pages using JSP.
		CO6	Interface peripherals such as sensors, actuators, and displays with microcontrollers.

4	IT8076 Web Technology	CO1	Design simple web pages using markup languages like HTML and XHTML.
		CO2	Create dynamic web pages using DHTML and java script that is easy to navigate and use.
		CO3	Program server side web pages that have to process request from client side web pages
		CO4	Represent web data using XML and develop web pages using JSP.
		CO5	Understand various web services and how these web services interact.
		CO6	Integrate databases with web applications for data storage and retrieval.
5	CS8494 Software Engineering	CO1	Identify the key activities in managing a software project.
		CO2	Compare different process models.
		CO3	Concepts of requirements engineering and Analysis Modeling.
		CO4	Apply systematic procedure for software design and deployment.
		CO5	Compare and contrast the various testing and maintenance.
		CO6	Manage project schedule, estimate project cost and effort required.
6	IT8051 Software Testing	CO1	Design test cases suitable for a software development for different domains.
		CO2	Identify suitable tests to be carried out.
		CO3	Prepare test planning based on the document.
		CO4	Document test plans and test cases designed.
		CO5	Use automatic testing tools
		CO6	Develop and validate a test plan.
7	EC8681 Microprocessors and Microcontrollers Laboratory	CO1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations
		CO2	Interface different I/Os with processor
		CO3	Generate waveforms using Microprocessors
		CO4	Execute Programs in 8051
		CO5	Explain the difference between simulator and Emulator
		CO6	Analyze and optimize code for efficiency and performance.
		CO1	Implement various protocols using TCP and UDP

8	CS8581 Networks Laboratory	CO2	Compare the performance of different transport layer protocols.
		CO3	Use simulation tools to analyze the performance of various network protocols.
		CO4	Analyze various routing algorithms.
		CO5	Implement error correction codes.
		CO6	Document network configurations and procedures comprehensively.

9	IT8511 Web Technology Laboratory	CO1	Design simple web pages using markup languages like HTML and XHTML.
		CO2	Create dynamic web pages using DHTML and java script that is easy to navigate and use.
		CO3	Program server side web pages that have to process request from client side web pages.
		CO4	Represent web data using XML and develop web pages using JSP.
		CO5	Understand various web services and how these web services interact.

EVEN SEM (VI)

III YEAR (6 Theory + 3 Labs)

S.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	IT8601 Computational Intelligence	CO1	Provide a basic exposition to the goals and methods of Computational Intelligence.
		CO2	Study of the design of intelligent computational techniques.
		CO3	Apply the Intelligent techniques for problem solving
		CO4	Improve problem solving skills using the acquired knowledge in the areas of, reasoning, natural language understanding, computer vision, automatic programming and machine learning.
		CO5	Developing fuzzy systems for decision-making under uncertainty.
		CO6	Conducting experiments to evaluate algorithm performance based on metrics such as accuracy, convergence rate, or computational efficiency.
2	CS8592 Object Oriented Analysis and Design	CO1	Express software design with UML diagrams
		CO2	Design software applications using OO concepts.
		CO3	Identify various scenarios based on software requirements
		CO4	Transform UML based software design into pattern based design using design patterns
		CO5	Understand the various testing methodologies for OO software
		CO6	Apply object-oriented analysis and design (OOAD) techniques to model and design software systems.
3	IT8602 Mobile Communication	CO1	Explain the basics of mobile telecommunication system
		CO2	Illustrate the generations of telecommunication systems in wireless network
		CO3	Understand the architecture of Wireless LAN technologies
		CO4	Determine the functionality of network layer and Identify a routing protocol for a given Ad hoc networks
		CO5	Explain the functionality of Transport and Application layer
		CO6	Design and simulate mobile communication networks using appropriate tools and techniques.

4	CS8091 Big Data Analytics	CO1	Work with big data tools and its analysis techniques
		CO2	Analyze data by utilizing clustering and classification algorithms
		CO3	Learn and apply different mining algorithms and recommendation systems for large volumes of data
		CO4	Perform analytics on data streams
		CO5	Learn NoSQL databases and management.
		CO6	Evaluate and optimize the performance of big data analytics solutions.
5	CS8092 Computer Graphics and Multimedia	CO1	Design two dimensional graphics.
		CO2	Apply two dimensional transformations.
		CO3	Design three dimensional graphics.
		CO4	Apply three dimensional transformations.
		CO5	Apply Illumination and color models.
		CO6	Apply clipping techniques to graphics.
		CO7	Understood Different types of Multimedia File Format
		CO8	Design Basic 3d Scenes using Blender
6	IT8076 Software Testing	CO1	Design test cases suitable for a software development for different domains.
		CO2	Identify suitable tests to be carried out.
		CO3	Prepare test planning based on the document.
		CO4	Document test plans and test cases designed.
		CO5	Use automatic testing tools
		CO6	Develop and validate a test plan.
7	CS8662 Mobile Application Development Laboratory	CO1	Develop mobile applications using GUI and Layouts.
		CO2	Develop mobile applications using Event Listener.
		CO3	Develop mobile applications using Databases.
		CO4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi threading and GPS.
		CO5	Analyze and discover own mobile app for simple needs.
		CO1	Perform OO analysis and design for a given problem specification.

8	CS8582 Object Oriented Analysis and Design Laboratory	CO2	Identify and map basic software requirements in UML mapping.
		CO3	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns
		CO4	Test the compliance of the software with the SRS.
		CO5	Collaborate in teams to develop and test object-oriented software systems.
		CO6	Implement object-oriented programming concepts in a chosen programming language (e.g., Java, C++) to realize the designed models.

9	HS8581 Professional Communication	CO1	Make effective presentations
		CO2	Participate confidently in Group Discussions.
		CO3	Attend job interviews and be successful in them.
		CO4	Develop adequate Soft Skills required for the workplace

ODD SEM (VII)

IV YEAR (6 Theory + 2 Labs)

S.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	MG8591 Principles of Management	CO1	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management
2	CS8792 Cryptography and Network Security	CO1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
		CO2	Apply the different cryptographic operations of symmetric cryptographic algorithms
		CO3	Apply the different cryptographic operations of public key cryptography
		CO4	Apply the various Authentication schemes to simulate different applications.
		CO5	Understand various Security practices and System security standards
		CO6	Evaluate the applicability of new technologies and algorithms to address evolving security threats and challenges.
3	CS8791 Cloud Computing	CO1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
		CO2	Learn the key and enabling technologies that help in the development of cloud.
		CO3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.
		CO4	Explain the core issues of cloud computing such as resource management and security.
		CO5	Be able to install and use current cloud technologies.
		CO6	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.
4	OMD533 Telehealth Technology	CO1	Apply multimedia technologies in telemedicine
		CO2	Explain protocols behind encryption techniques for secure transmission of data.
		CO3	Apply telehealth in healthcare

		CO4	Assess the suitability of different technologies based on healthcare needs, patient demographics, and regulatory requirements.
		CO5	Optimize interfaces and workflows to enhance usability, efficiency, and satisfaction for healthcare professionals and patients.
		CO6	Implement security measures and protocols to protect patient information and ensure confidentiality.
5	IT8075 Software Project Management	CO1	Understand Project Management principles while developing software.
		CO2	Gain extensive knowledge about the basic project management concepts, framework and the process models.
		CO3	Obtain adequate knowledge about software process models and software effort estimation techniques.
		CO4	Estimate the risks involved in various project activities.
		CO5	Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles.
		CO6	Learn staff selection process and the issues related to people management
6	CS8079 Human Computer Interaction	CO1	Design effective dialog for HCI
		CO2	Design effective HCI for individuals and persons with disabilities.
		CO3	Assess the importance of user feedback.
		CO4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites.
		CO5	Develop meaningful user interface.
		CO6	Communicate design concepts and usability findings effectively to stakeholders, using appropriate documentation and presentation formats.
7	IT8711 FOSS and Cloud Computing Laboratory	CO1	Configure various virtualization tools such as Virtual Box, VMware workstation.
		CO2	Design and deploy a web application in a PaaS environment.
		CO3	Learn how to simulate a cloud environment to implement new schedulers.
		CO4	Install and use a generic cloud environment that can be used as a private cloud.
		CO5	Manipulate large data sets in a parallel environment.
		CO1	Develop code for classical Encryption Techniques to solve the problems.

8	IT8761 Security Laboratory	CO2	Build cryptosystems by applying symmetric and public key encryption algorithms.
		CO3	Construct code for authentication algorithms.
		CO4	Develop a signature scheme using Digital signature standard.
		CO5	Demonstrate the network security system using open source tools
		CO6	Gain practical experience in simulating real-world security scenarios.

EVEN SEM (VIII)

IV YEAR (2Theory + 1 Labs)

S.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	GE8076 Professional Ethics in Engineering	CO1	Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.
2	IT8005 Electronic Commerce	CO1	Design Website using HTML CSS and JS
		CO2	Design Responsive Sites
		CO3	Manage, Maintain and Support Web Apps
		CO4	Understand the role of middleware and integration technologies in e-commerce systems.
		CO5	Explore digital marketing techniques (e.g., SEO, SEM, social media marketing) and their application in driving traffic and sales in e-commerce.
		CO6	Discuss international regulations and compliance requirements for e-commerce operations.
3	IT8811 Project Work	CO1	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.