



Department of Information Technology

Course Outcomes (COs)

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Department of Information Technology

Academic Year Session 2022-23,2023-24

B.Tech IT 3 rd Sem		
Course Code/Course Name	Course Outcomes	
ES 301(Energy and environmental Engineering)	ES301.1	Identify and compare different energy resources and systems to analyze energy requirement issues
	ES301.2	Apply the concept of ecosystem and assess the synergy between the components and functions of an ecosystem.
	ES301.3	Demonstrate the critical analyzing ability towards the biodiversity, its conservation and need for sustainable development.
	ES301.4	To interpret and summarized the concept of environmental pollution to recognize the need of environmental protection as a life long learning.
	ES301.5	To understand, classify and apply professional, social and environmental ethical principles.
BT 302(Discrete Structure)	BT302.1	Ability to define and apply the concepts of Set, Relation ,Function , mathematical reasoning and counting techniques in mathematical situations.
	BT302.2	Understand and Apply the concept of functions and algebraic structures such as Groups and Rings to finite state machines and coding theory.
	BT302.3	Ability to apply and analyse the fundamentals of propositional logic and predicate calculus in Boolean Algebra to test the validity of statements.
	BT302.4	Demonstrate the knowledge of types of graphs, posets and lattice and apply it to solve engineering problems.
	BT302.5	Ability to evaluate the solution of different type of recurrence relations using generating functions.
IT 303(Data Structure)	IT 303.1	Ability to Define, understand concepts of different categories of data Structures
	IT 303.2	Identify different parameters to analyze the performance of an algorithm.
	IT 303.3	Design algorithms to perform operations with Linear and Nonlinear data structures
	IT 303.4	Compare and contrast different implementations of data structures.
	IT 303.5	Apply appropriate data structure to solve and implement various real time problems.
IT 304(Object oriented programming and methodology)	IT 304.1	Understand and Describe of object oriented programming and discuss advantages over procedur oriented programming
	IT 304.2	Demonstrate and apply C++ classes and Objects concepts using Function,constructors , arrays and polymorphism
	IT 304.3	Understand and Apply the concepts of inheritance and operator overloading using c++ programming


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IT 305(Digital-Circuit and systems)	IT 304.4	Analyse memory management concepts and implement pointers and virtual function
	IT 304.2	Design application to solve real world problems
	IT305.1	Student will be able to understand and apply the basic concept digital electronics for digital circuit and system design.
	IT305.2	Students will be able to realize and describe the operation of combinational circuits.
	IT305.3	Students will be able to realize and describe the operation of sequential circuits
	IT305.4	Students will be able to apply the fundamental knowledge of digital electronics principle for understanding and creating different (unipolar and bipolar) logic families.
	IT305.5	Students will be able to apply the fundamental knowledge of analog and digital electronics principle for understanding and creating different analog to digital converter, multi-vibrator
IT 306(Computer Workshop(Java))	IT306.1	Understand the fundamentals of objectoriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms. (Understand).
	IT306.2	Apply different technologies by implementing them in the Java programming language to solve the given problem (Apply).
	IT306.3	Design Graphical User Interface using Swings, AWT and Event Handling.
	IT306.4	Build connections through Java Database Connectivity (JDBC).
	IT306.5	Develop Programs for real world applications using the Java Collection API as well as the Java Standard class library. (Develop)
BT 107(Internship)	BT107.1	To Describe the everyday operations of an agency or organization.
	BT107.2	Student will able to Identify the ethical standards of behavior for professionals and interns within the agency/organization.
	BT107.3	Students will be able to Focus professional soft skills such as communication, punctuality and time management.
	BT107.4	Student will be able to Manage various personal habits or a social skill to deal better with work situations
	BT107.5	Build a professional network that can be a resource for the student



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B.Tech IT 4 th Sem		
Course Code/Course Name	Course Outcomes	
BT 401(Mathematics- III)	BT401.1	Ability to Understand and evaluate the zero of algebraic and transcendental equations, simultaneous linear equations with the help of Numerical Methods.
	BT401.2	Understand the theoretical principles of numerical techniques and the associated error measures and apply them to find differentiation, integration and Differential Equations
	BT401.3	Ability to remember operators and use them to estimate the value between the given set of data (interpolation) and hence, apply it to estimate various real life scenarios.
	BT401.4	Analyze different types of statistical situations in which different probability distributions can be applied.
	BT401.5	Ability to analyze and evaluate the solution of ODE and PDE by using Laplace and Fourier Transform.
IT 402(Computer Architecture)	IT 402.1	Able to identify the basic structure of a processor, memory, Instructions to analyze the working of a system.
	IT 402.2	Understand the arithmetic operations, Analyze of hardwired and micro-programmed control units.
	IT 402.3	Interpreting and Analyzing the RISC and CISC ,Study of CPU.
	IT 402.4	Classify and analyse the memory structure ,Develop the concepts of memory management, interleaving and mapping.
	IT 402.5	Analyze the arithmetic and instructional pipelines.
IT 403(Analysis Design of Algorithm)	IT 403.1	Learn, Apply & Analyze the complexity in Divide and Conquer techniques for suitable problems
	IT 403.2	Apply and identify the Optimal Solution using the Greedy Approach for appropriate problems.
	IT 403.3	Compute and Analyze the problems by using Dynamic Programming approach
	IT 403.4	Apply the concept of Backtracking and Branch & Bound for solving the suitable problems, and enhance the performance of the algorithm
	IT 403.5	Learn the concept of NP completeness and Apply the various operations on tree & Graph data structures
IT 404(Analog and digital Communication)	IT404.1	Student will be able to understand and apply the basic concept digital electronics for digital circuit and system design.
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	IT404.5	Students will be able to apply the fundamental knowledge of analog and digital electronics principle for understanding and creating different analog to digital converter, multi-vibrator
IT 405(Database Management System)	IT405.1	Understand the basic concept of dbms and different issues involved in the design and implementation of a database system.
	IT405.2	Study the physical and logical database designs, database modeling, relational, hierarchical, and network models
	IT405.3	Understand and use data manipulation language to query, update, and manage a database
	IT405.4	Develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency.
	IT405.5	Design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
IT 406(Programming Practices- MATLAB)	IT 406.1	To study MATLAB environment, data types, variables, operators and assignment statements in MATLAB and able to use MATLAB for interactive computations.
	IT406.2	To implement the arithmetic operations and familiar with vector, matrices and array and their use..
	IT406.3	Able to use basic flow controls (if-else, for, while) to implement the control structures in MATLAB. Able to program scripts and functions using the MATLAB development environment and generate plots and export this for use in reports and presentations.
	IT 406.4	Able to create web pages using HTML Tags and Cascading Style Sheets.
IT407 (LINUX and programming) R	IT 407.1	Understand the basic commands used in LINUX operating system.
	IT 407.2	Learn important LINUX/UNIX library functions and system calls.
	IT 407.3	Write, Compile and Debug shell scripting in LINUX environment.
	IT 407.4	Implementation in R programming language and its function
	IT 407.5	Accessing and reading data into R



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B.Tech IT 5 th Sem		
Course Code/Course Name	Course Outcomes	
IT 501(Operating system)	IT 501.1	Gain knowledge of history of operating systems. Understand design issues associated with operating systems
	IT 501.2	Gain knowledge of various process management concepts including scheduling, synchronization, deadlocks
	IT 501.3	Understand concepts of memory management including virtual memory
	IT 501.4	Understand issues related to file system interface and implementation, disk management
	IT 501.5	Be familiar with protection and security mechanisms and Be familiar with various types of operating systems including Unix
IT 502(Computer Network)	IT 502.1	Have a good understanding of the OSI Reference Model and its Layers
	IT 502.2	Identify core networking and infrastructure components and the roles they serve; and given requirements and constraints, design an IT infrastructure including devices, topologies, protocols, systems software, management and security;
	IT 502.3	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies
	IT 502.4	Explain the transport layer and application layer operation . Evaluate and analysis of TCP, UDP and SCTP
	IT 502.5	Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols
IT 503(Theory of computation)	IT 503.1	Learning of fundamental concepts in automata theory and designing of Finite Automata, conversion NFA to DFA. Application of Finite Automata in computer science and real world.
	IT 503.2	Minimization of DFA and Application of regular expression and conversion from RE to Finite Automata and Finite Automata to Regular Expression and Proving language are not regular.
	IT 503.3	Designing of CFG's , Construction of parse trees, finding and removing ambiguity in grammars, simplification of CFG, Conversion of grammar to Chomsky Normal Form ,Greibach normal form.
	IT 503.4	Designing problems on Pushdown Automata and conversion of grammar to PDA, PDA to Grammar.
	IT 503.5	Designing Turing machines, understanding the working of various types of Turing machines and study P and NP type problem.
IT 504(Java programming)	IT 504.1	Ability to use the Java SDK environment and to develop, create, debug and run simple Java programs using the OOPs concept



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	IT 504.2	Understand to use Abstract Window Toolkit for making GUI objects like buttons, scroll, windows etc., and to generate the dynamic content using Applets.
	IT 504.3	Implement the methods and concept of multithreading and Exception Handling techniques to make the system bug free
	IT 504.4	Learn to access database through Java programs, using Java Data Base Connectivity (JDBC) and interact Java application with Input/Output devices by Input/Output streams.
	IT 504.5	Model the various clients through socket programming concept and invoke the remote methods in an application using Remote Method Invocation (RMI).
IT 505(Advanced Java Programming)	IT 505.1	Ability to access database through Java programs, using Java Data Base Connectivity (JDBC).
	IT 505.2	Design the dynamic web pages, using Servlets and JSP.
	IT 505.3	Access the remote methods in an application using Remote Method Invocation (RMI)
	IT 505.4	Demonstrate the multi-tier architecture of web-based enterprise applications using Enterprise Java Beans (EJB).
	IT 505.5	Develop Stateful, Stateless and Entity Beans and use Struts frameworks, which gives the opportunity to reuse the codes for quick development.
IT 506(Soft Skill)	IT 506.1	Effectively communicate through verbal/oral communication and improve the listening skills
	IT 506.2	Ability to develop planning and drafting competencies in professional communication for effective presentation.
	IT 506.3	Active participation in group discussion / meetings / interviews and to prepare & deliver presentations.
	IT 506.4	Become more effective individual through goal/target setting, self-motivation and practicing creative thinking
BT407(Evaluation of Internship-II)	BT 407.1	To Describe the everyday operations of an agency or organization.
	BT 407.2	Student will be able to Identify the ethical standards of behavior for professionals and interns within the agency/organization.
	BT 407.3	Students will be able to Focus professional soft skills such as communication, punctuality and time management.
	BT 407.4	Student will be able to Manage various personal habits or a social skill to deal better with work situations
	BT 407.5	Build a professional network that can be a resource for the student
IT 508(Minor Project- I)	IT 508.1	Describe how to convert real problems to provide problem based solution.
	IT 508.2	Demonstrate the product based and application based solution of problems.
	IT 508.3	Analysis of system modules according to the requirement.
	IT 508.4	Designing of the system architecture, UML diagrams and report writing.
	IT 508.5	Evaluate structural as well as functional testing after developing test case.



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B.Tech IT 6 th Sem		
Course Code/Course Name	Course Outcomes	
IT 601(Computer Graphics and multimedia)	IT 601.1	Understand the basic concepts of computer graphics, different graphics devices of computer graphics
	IT 601.2	Analyze and illustrate line and circle drawing algorithms for scan conversion.
	IT 601.3	Develop understanding of the basic principles of 2D and 3D transformation and apply geometric transformations on graphic objects
	IT 601.4	Understand multimedia systems architecture, multimedia components and various multimedia tools.
	IT 601.5	Identify different media representations of different multimedia data and data and file formats
IT 602(Wireless and Mobile computing)	IT 602.1	Understand fundamentals of wireless communications
	IT 602.2	Analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks
	IT 602.3	Demonstrate basic skills for cellular networks design.
	IT 602.4	Apply knowledge of TCP/IP extensions for mobile and wireless networking.
	IT 602.5	Acquire the knowledge to administrate and to maintain a Wireless LAN
IT 603(Data mining)	IT 603.1	To Understand the principals & functionalities of Data Warehousing and different OLAP technologies and techniques.
	IT 603.2	To Explain Data Mining & Data Preprocessing techniques with its applications & challenges.
	IT 603.3	To Develop ability for designing various algorithms based on data mining tools.
	IT 603.4	To illustrate various classification & clustering algorithm for analysing & prediction.
	IT 603.5	To Study web data mining & its types along with the Security Issue, Privacy Issue, Ethical Issue.
IT 604(Software Engineering)	IT 604.1	To introduce software development life cycle and various software process models
	IT 604.2	To introduce measures and metrics for software quality, reliability and software estimation techniques
	IT 604.3	To develop an understanding of software analysis and design phases
	IT 604.4	To introduce coding standards, guidelines and various software testing techniques
	IT 604.5	To introduce various activities for software maintenance and quality assurance
IT605(python Lab)	IT 605.1	Install Python and have knowledge of syntax of Python
	IT 605.2	Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
	IT 605.3	Express different Decision Making statements and Functions


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	IT 605.4	Develop code in Python using functions, loops etc.
	IT 605.5	Design GUI Applications in Python and evaluate different database operations Understand and Describe of object oriented programming and discuss advantages over procedure oriented programming
IT 606(ANDROID Programming Lab)	IT 606.1	Experiment on Integrated Development Environment for Android Application Development.
	IT 606.2	Design and Implement User Interfaces and Layouts of Android App.
	IT 606.3	Use Intents for activity and broadcasting data in Android App.
	IT 606.4	Design and Implement Database Application and Content Providers.
	IT 606.5	Experiment with Camera and Location Based service and develop Android App with Security features.
IT 607(Internship-III)	IT 607.1	To Describe the everyday operations of an agency or organization.
	IT 607.1	Student will able to Identify the ethical standards of behavior for professionals and interns within the agency/organization.
	IT 607.1	Students will be able to Focus professional soft skills such as communication, punctuality and time management.
	IT 607.1	Student will be able to Manage various personal habits or a social skill to deal better with work situations
	IT 607.1	Build a professional network that can be a resource for the student
IT 608(Minor Project II)	IT608.1	Designing of the project with modern programming languages
	IT608.2	Development of the project components module wise.
	IT608.3	Testing and analysis of project with various test cases and tools.
	IT608.4	Evaluate the project for deployment in different environment.
	IT608.5	Maintenance the project involving the changing and updating the modules as per requirements.



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B.Tech IT 7 th Sem		
Course Code/Course Name	Course Outcomes	
IT701(Soft Computing)	IT 701.1	Understand concept of ANN and explain the XOR problem.
	IT 701.2	Use supervised neural networks to classify given inputs.
	IT 701.3	Understand unsupervised neural networks for clustering data.
	IT 701.4	Build Fuzzy inference system using concepts of fuzzy logic
	IT 701.5	Obtain an optimized solution to a given problem using genetic algorithm
IT 702(Cloud Computing)	IT 702.1	To define and understand the concepts ,key technologies, strength and limitation of cloud computing .
	IT 702.2	To understand and analyse the architecture and infrastructure of cloud computing including SaaS, PaaS,IaaS, public cloud, private cloud and hybrid cloud and interfaces.
	IT 702.3	To understand and Applying the virtualization technology
	IT 702.4	To understand and compare the various data, cloud services to acquire efficient database for cloud storage.-
	IT 702.5	Explaining and Illustrating the core issues of cloud computing,Cloud security fundamentals in cloud.
IT 703(Internet of things.)	IT 703.1	To understand the Components that forms part of IoT Architecture
	IT 703.2	To Analyse the most appropriate IoT Devices and Sensors based on Case Studies
	IT 703.3	To design Mobile Application which can interact with Sensors and Actuators.
	IT 703.4	To evaluate and select the appropriate protocol for communication in IoT network
	IT 703.5	To Apply IOT For solutions of social challenge
IT 704(Cloud computing Lab)	IT 704.1	To define and understand the concepts ,key technologies, strength and limitation of cloud computing .
	IT 704.2	To understand and analyse the architecture and infrastructure of cloud computing including SaaS, PaaS,IaaS, public cloud, private cloud and hybrid cloud and interfaces.
	IT 704.3	To understand and Applying the virtualization technology.
	IT 704.4	To understand and compare the various data, cloud services to acquire efficient database for cloud storage.-
	IT 704.5	Explaining and Illustrating the core issues of cloud computing, Cloud security fundamentals in cloud.
IT 705(Internet of things Lab)	IT 705.1	To understand the Components that forms part of IoT Architecture
	IT 705.2	To Analyse the most appropriate IoT Devices and Sensors based on Case Studies
	IT 705.3	To design Mobile Application which can interact with Sensors and Actuators.



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IT 706(Major Project-I)	IT 705.4	To evaluate and select the appropriate protocol for communication in IoT network
	IT 705.5	To Apply IOT For solutions of societal challenge
	IT706.1	Understand and identify the concept for the project.
	IT706.2	Analyse the requirements of different tools and techniques for project
	IT706.3	Design the various diagrams like data Flow diagram and use case diagrams for the project.
	IT706.4	Design the software requirement specification for the project.
	IT706.5	Understand and identify the future scope of the project.



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B.Tech IT 8 th Sem		
Course Code/Course Name	Course Outcomes	
IT 801(Information security)	IT 801.1	Understand key terms and concepts in information security and Cryptography and evaluate the cyber security needs of an organization.
	IT 801.2	Acquire knowledge to secure computer systems, protect personal data, and secure computer networks in an organization
	IT 801.3	Apply knowledge of various encryption algorithms and authentication mechanisms to secure information in computer systems and networks
	IT 801.4	Understand principles of web security to secure network by monitoring and analyzing the nature of attacks and design/develop security architecture for an organization.
	IT 801.5	Design operational and strategic information security strategies and policies.
IT 802(Machine learning)	IT 802.1	Recognize the characteristics of machine learning strategies.
	IT 802.2	Apply various supervised learning methods to appropriate problems.
	IT 802.3	Identify and integrate more than one technique to enhance the performance of learning.
	IT 802.4	Develop probabilistic and unsupervised learning models for handling unknown pattern.
	IT 802.5	Analyze the co-occurrence of data to find interesting frequent patterns and Preprocess the data before applying to any real-world problem and can evaluate its performance.
IT 803(Blockchain)	IT803.1	Learn and Understand block chain technology
	IT803.2	Acquire knowledge of cryptocurrencies
	IT803.3	Develop block chain based solutions and write smart contract using Hyperledger Fabric and Ethereum frameworks
	IT803.4	Build and deploy block chain application for on premise and cloud based architecture
	IT803.5	Integrate ideas from various domains and implement them using block chain technology in different perspectives
IT 804(Machine learning Lab)	IT 804.1	Understand and apply knowledge of computing and mathematics to machine learning problems, models, and algorithms.
	IT 804.2	Analyze a problem and identify the appropriate machine learning model for its solution.
	IT 804.3	Design and develop machine learning algorithms using python Language
	IT 804.4	Evaluate and compare different machine learning algorithms on various datasets using python.
	IT 804.5	Understand and apply knowledge of neural network concepts for implementing machine learning algorithms.


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IT 805(Major Project-II)	IT 805.1	Understand the conceptual clarity about project organization functionality and various stages of a project, prepared report in terms of conclusion
	IT 805.2	Classify the feasibility analysis in SDLC and project management using product and process metrics and choose the suitable process.
	IT 805.3	Explore design alternative and designing of system modules according to the requirement.
	IT 805.4	Designing of the architecture and show the data flow as well as control flow of the system
	IT 805.5	Using a specific language, create a module based on real life based problem and present this in a team.



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Academic Year Session 2020-21,2021-22

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Course Code/Course Name	Course Outcomes	
ES 301(Energy and environmental Engineering)	ES301.1	Identify and compare different energy resources and systems to analyze energy requirement issues
	ES301.2	Apply the concept of ecosystem and assess the synergy between the components and functions of an ecosystem.
	ES301.3	Demonstrate the critical analyzing ability towards the biodiversity, its conservation and need for sustainable development.
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	IT 304.4	Analyse memory management concepts and implement pointers and virtual function
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B.Tech IT 5 th Sem		
Course Code/Course Name	Course Outcomes	
IT 501(Operating system)	IT 501.1	Gain knowledge of history of operating systems. Understand design issues associated with operating systems
	IT 501.2	Gain knowledge of various process management concepts including scheduling, synchronization, deadlocks
	IT 501.3	Understand concepts of memory management including virtual memory
	IT 501.4	Understand issues related to file system interface and implementation, disk management
	IT 501.5	Be familiar with protection and security mechanisms and Be familiar with various types of operating systems including Unix
IT 502(Computer Network)	IT 502.1	Have a good understanding of the OSI Reference Model and its Layers
	IT 502.2	Identify core networking and infrastructure components and the roles they serve; and given requirements and constraints, design an IT infrastructure including devices, topologies, protocols, systems software, management and security;
	IT 502.3	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies
	IT 502.4	Explain the transport layer and application layer operation . Evaluate and analysis of TCP, UDP and SCTP
	IT 502.5	Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols
IT 503(Theory of computation)	IT 503.1	Learning of fundamental concepts in automata theory and designing of Finite Automata, conversion NFA to DFA. Application of Finite Automata in computer science and real world.
	IT 503.2	Minimization of DFA and Application of regular expression and conversion from RE to Finite Automata and Finite Automata to Regular Expression and Proving language are not regular.
	IT 503.3	Designing of CFG's , Construction of parse trees, finding and removing ambiguity in grammars, simplification of CFG, Conversion of grammar to Chomsky Normal Form , Greibach normal form.
	IT 503.4	Designing problems on Pushdown Automata and conversion of grammar to PDA, PDA to Grammar.
	IT 503.5	Designing Turing machines, understanding the working of various types of Turing machines and study P and NP type problem.
IT 504(Artificial intelligence)	IT 504.1	To understand the basic concepts and techniques of artificial intelligence.
	IT 504.2	To explore problem-solving methods and search strategies.
	IT 504.3	To learn knowledge representation and reasoning methods.

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	IT 504.4	To study machine learning algorithms and their applications..
	IT 504.5	To gain insights into advanced AI topics such as natural language processing and robotics.
IT 505(Advanced Java Programming)	IT 505.1	Ability to access database through Java programs, using Java Data Base Connectivity (JDBC).
	IT 505.2	Design the dynamic web pages, using Servlets and JSP.
	IT 505.3	Access the remote methods in an application using Remote Method Invocation (RMI)
	IT 505.4	Demonstrate the multi-tier architecture of web-based enterprise applications using Enterprise Java Beans (EJB).
	IT 505.5	Develop Stateful, Stateless and Entity Beans and use Struts frameworks, which gives the opportunity to reuse the codes for quick development.
IT 506(Soft Skill)	IT 506.1	Effectively communicate through verbal/oral communication and improve the listening skills
	IT 506.2	Ability to develop planning and drafting competencies in professional communication for effective presentation.
	IT 506.3	Active participation in group discussion / meetings / interviews and to prepare & deliver presentations.
	IT 506.4	Become more effective individual through goal/target setting, self-motivation and practicing creative thinking
BT407(Evaluation of Internship-II)	BT 407.1	To Describe the everyday operations of an agency or organization.
	BT 407.2	Student will be able to Identify the ethical standards of behavior for professionals and interns within the agency/organization.
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IT 508(Minor Project- I)	IT 508.1	Describe how to convert real problems to provide problem based solution.
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	IT 508.3	Analysis of system modules according to the requirement.
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B.Tech IT 6 th Sem		
Course Code/Course Name	Course Outcomes	
IT 601(Computer Graphics and multimedia)	IT 601.1	Understand the basic concepts of computer graphics, different graphics devices of computer graphics
	IT 601.2	Analyze and illustrate line and circle drawing algorithms for scan conversion.
	IT 601.3	Develop understanding of the basic principles of 2D and 3D transformation and apply geometric transformations on graphic objects
	IT 601.4	Understand multimedia systems architecture, multimedia components and various multimedia tools.
	IT 601.5	Identify different media representations of different multimedia data and data and file formats
IT 602(Wireless and Mobile computing)	IT 602.1	Understand fundamentals of wireless communications
	IT 602.2	Analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks
	IT 602.3	Demonstrate basic skills for cellular networks design.
	IT 602.4	Apply knowledge of TCP/IP extensions for mobile and wireless networking.
	IT 602.5	Acquire the knowledge to administrate and to maintain a Wireless LAN
IT 603(Compiler Design)	IT 603.1	To understand the fundamental concepts of compiler design..
	IT 603.2	To learn the process of lexical analysis and its tools.
	IT 603.3	To grasp the techniques of syntax analysis and parsing algorithms.
	IT 603.4	Gain knowledge of semantic analysis and intermediate code generation.
	IT 603.5	Explore optimization techniques and code generation processes.
IT 604(Software Engineering)	IT 604.1	To introduce software development life cycle and various software process models
	IT 604.2	To introduce measures and metrics for software quality, reliability and software estimation techniques
	IT 604.3	To develop an understanding of software analysis and design phases
	IT 604.4	To introduce coding standards, guidelines and various software testing techniques
	IT 604.5	To introduce various activities for software maintenance and quality assurance
IT605(Python Lab)	IT 605.1	Install Python and have knowledge of syntax of Python
	IT 605.2	Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
	IT 605.3	Express different Decision Making statements and Functions
	IT 605.4	Develop code in Python using functions, loops etc.



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	IT 605.5	Design GUI Applications in Python and evaluate different database operations Understand and Describe of object oriented programming and discuss advantages over procedure oriented programming
IT 606(ANDROID Programming Lab)	IT 606.1	Experiment on Integrated Development Environment for Android Application Development.
	IT 606.2	Design and Implement User Interfaces and Layouts of Android App.
	IT 606.3	Use Intents for activity and broadcasting data in Android App.
	IT 606.4	Design and Implement Database Application and Content Providers.
	IT 606.5	Experiment with Camera and Location Based service and develop Android App with Security features.
IT 607(Internship-III)	IT 607.1	To Describe the everyday operations of an agency or organization.
	IT 607.1	Student will able to Identify the ethical standards of behavior for professionals and interns within the agency/organization.
	IT 607.1	Students will be able to Focus professional soft skills such as communication, punctuality and time management.
	IT 607.1	Student will be able to Manage various personal habits or a social skill to deal better with work situations
	IT 607.1	Build a professional network that can be a resource for the student
IT 608(Minor Project II)	IT608.1	Designing of the project with modern programming languages
	IT608.2	Development of the project components module wise.
	IT608.3	Testing and analysis of project with various test cases and tools.
	IT608.4	Evaluate the project for deployment in different environment.
	IT608.5	Maintenance the project involving the changing and updating the modules as per requirements.



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B.Tech IT 7 th Sem		
Course Code/Course Name	Course Outcomes	
IT701(Soft Computing)	IT 701.1	Understand concept of ANN and explain the XOR problem.
	IT 701.2	Use supervised neural networks to classify given inputs.
	IT 701.3	Understand unsupervised neural networks for clustering data.
	IT 701.4	Build Fuzzy inference system using concepts of fuzzy logic
	IT 701.5	Obtain an optimized solution to a given problem using genetic algorithm
IT 702(Cloud Computing)	IT 702.1	To define and understand the concepts ,key technologies, strength and limitation of cloud computing .
	IT 702.2	To understand and analyse the architecture and infrastructure of cloud computing including SaaS, PaaS,IaaS, public cloud, private cloud and hybrid cloud and interfaces.
	IT 702.3	To understand and Applying the virtualization technology
	IT 702.4	To understand and compare the various data, cloud services to acquire efficient database for cloud storage.-
	IT 702.5	Explaining and Illustrating the core issues of cloud computing,Cloud security fundamentals in cloud.
IT 703(Internet of things.)	IT 703.1	To understand the Components that forms part of IoT Architecture
	IT 703.2	To Analyse the most appropriate IoT Devices and Sensors based on Case Studies
	IT 703.3	To design Mobile Application which can interact with Sensors and Actuators.
	IT 703.4	To evaluate and select the appropriate protocol for communication in IoT network
	IT 703.5	To Apply IOT For solutions of social challenge
IT 704(Cloud computing Lab)	IT 704.1	To define and understand the concepts ,key technologies, strength and limitation of cloud computing .
	IT 704.2	To understand and analyse the architecture and infrastructure of cloud computing including SaaS, PaaS,IaaS, public cloud, private cloud and hybrid cloud and interfaces.
	IT 704.3	To understand and Applying the virtualization technology.
	IT 704.4	To understand and compare the various data, cloud services to acquire efficient database for cloud storage.-
	IT 704.5	Explaining and Illustrating the core issues of cloud computing, Cloud security fundamentals in cloud.
IT 705(Internet of things Lab)	IT 705.1	To understand the Components that forms part of IoT Architecture
	IT 705.2	To Analyse the most appropriate IoT Devices and Sensors based on Case Studies
	IT 705.3	To design Mobile Application which can interact with Sensors and Actuators.

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IT 706(Major Project-I)	IT 705.4	To evaluate and select the appropriate protocol for communication in IoT network
	IT 705.5	To Apply IOT For solutions of societal challenge
	IT706.1	Understand and identify the concept for the project.
	IT706.2	Analyse the requirements of different tools and techniques for project
	IT706.3	Design the various diagrams like data Flow diagram and use case diagrams for the project.
	IT706.4	Design the software requirement specification for the project.
	IT706.5	Understand and identify the future scope of the project.



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B.Tech IT 8 th Sem		
Course Code/Course Name	Course Outcomes	
IT 801(Information security)	IT 801.1	Understand key terms and concepts in information security and Cryptography and evaluate the cyber security needs of an organization.
	IT 801.2	Acquire knowledge to secure computer systems, protect personal data, and secure computer networks in an organization
	IT 801.3	Apply knowledge of various encryption algorithms and authentication mechanisms to secure information in computer systems and networks
	IT 801.4	Understand principles of web security to secure network by monitoring and analyzing the nature of attacks and design develop security architecture for an organization.
	IT 801.5	Design operational and strategic information security strategies and policies.
IT 802(Machine learning)	IT 802.1	Recognize the characteristics of machine learning strategies.
	IT 802.2	Apply various supervised learning methods to appropriate problems.
	IT 802.3	Identify and integrate more than one technique to enhance the performance of learning.
	IT 802.4	Develop probabilistic and unsupervised learning models for handling unknown pattern.
	IT 802.5	Analyze the co-occurrence of data to find interesting frequent patterns and Preprocess the data before applying to any real-world problem and can evaluate its performance.
IT 803(Blockchain)	IT803.1	Learn and Understand block chain technology
	IT803.2	Acquire knowledge of cryptocurrencies
	IT803.3	Develop block chain based solutions and write smart contract using Hyperledger Fabric and Ethereum frameworks
	IT803.4	Build and deploy block chain application for on premise and cloud based architecture
	IT803.5	Integrate ideas from various domains and implement them using block chain technology in different perspectives
IT 804(Machine learning Lab)	IT 804.1	Understand and apply knowledge of computing and mathematics to machine learning problems, models, and algorithms
	IT 804.2	Analyze a problem and identify the appropriate machine learning model for its solution.
	IT 804.3	Design and develop machine learning algorithms using python Language
	IT 804.4	Evaluate and compare different machine learning algorithms on various datasets using python.
	IT 804.5	Understand and apply knowledge of neural network concepts for implementing machine learning algorithms.


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IT 805(Major Project-II)	IT 805.1	Understand the conceptual clarity about project organization functionality and various stages of a project, prepared report in terms of conclusion
	IT 805.2	Classify the feasibility analysis in SDLC and project management using product and process metrics and choose the suitable process.
	IT 805.3	Explore design alternative and designing of system modules according to the requirement.
	IT 805.4	Designing of the architecture and show the data flow as well as control flow of the system
	IT 805.5	Using a specific language, create a module based on real life based problem and present this in a team.



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Academic Year Session 2019-20

B.Tech IT 3 rd Sem		
Course Code/Course Name	Course Outcomes	
ES 301(Energy and environmental Engineering)	ES301.1	Identify and compare different energy resources and systems to analyze energy requirement issues
	ES301.2	Apply the concept of ecosystem and assess the synergy between the components and functions of an ecosystem.
	ES301.3	Demonstrate the critical analyzing ability towards the biodiversity, its conservation and need for sustainable development.
	ES301.4	To interpret and summarized the concept of environmental pollution to recognize the need of environmental protection as a life long learning.
	ES301.5	To understand, classify and apply professional, social and environmental ethical principles.
BT 302(Discrete Structure)	BT302.1	Ability to define and apply the concepts of Set, Relation ,Function , mathematical reasoning and counting techniques in mathematical situations.
	BT302.2	Understand and Apply the concept of functions and algebraic structures such as Groups and Rings to finite state machines and coding theory.
	BT302.3	Ability to apply and analyse the fundamentals of propositional logic and predicate calculus in Boolean Algebra to test the validity of statements.
	BT302.4	Demonstrate the knowledge of types of graphs, posets and lattice and apply it to solve engineering problems.
	BT302.5	Ability to evaluate the solution of different type of recurrence relations using generating functions.
IT 303(Data Structure)	IT 303.1	Ability to Define, understand concepts of different categories of data Structures
	IT 303.2	Identify different parameters to analyze the performance of an algorithm.
	IT 303.3	Design algorithms to perform operations with Linear and Nonlinear data structures
	IT 303.4	Compare and contrast different implementations of data structures.
	IT 303.5	Apply appropriate data structure to solve and implement various real time problems.
IT 304(Object oriented programming and methodology)	IT 304.1	Understand and Describe of object oriented programming and discuss advantages over procedure oriented programming
	IT 304.2	Demonstrate and apply C++ classes and Objects concepts using Function,constructors , arrays and polymorphism
	IT 304.3	Understand and Apply the concepts of inheritance and operator overloading using c++ programming



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IT 305(Digital-Circuit and systems)	IT 304.4	Analyse memory management concepts and implement pointers and virtual function
	IT 304.2	Design application to solve real world problems
	IT305.1	Student will be able to understand and apply the basic concept digital electronics for digital circuit and system design.
	IT305.2	Students will be able to realize and describe the operation of combinational circuits.
	IT305.3	Students will be able to realize and describe the operation of sequential circuits
	IT305.4	Students will be able to apply the fundamental knowledge of digital electronics principle for understanding and creating different (unipolar and boipolar) logic families.
	IT305.5	Students will be able to apply the fundamental knowledge of analog and digital electronics principle for understanding and creating different analog to digital converter, multi-vibrator
IT 306(Computer Workshop(Java))	IT306.1	Understand the fundamentals of objectoriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms. (Understand).
	IT306.2	Apply different technologies by implementing them in the Java programming language to solve the given problem (Apply).
	IT306.3	Design Graphical User Interface using Swings, AWT and Event Handling.
	IT306.4	Build connections through Java Database Connectivity (JDBC).
	IT306.5	Develop Programs for real world applications using the Java Collection API as well as the Java Standard class library. (Develop)
BT 107(Internship)	BT107.1	To Describe the everyday operations of an agency or organization.
	BT107.2	Student will able to Identify the ethical standards of behavior for professionals and interns within the agency/organization.
	BT107.3	Students will be able to Focus professional soft skills such as communication, punctuality and time management.
	BT107.4	Student will be able to Manage various personal habits or a social skill to deal better with work situations
	BT107.5	Build a professional network that can be a resource for the student

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B.Tech IT 4 th Sem		
Course Code/Course Name	Course Outcomes	
BT 401(Mathematics- III)	BT401.1	Ability to Understand and evaluate the zero of algebraic and transcendental equations, simultaneous linear equations with the help of Numerical Methods.
	BT401.2	Understand the theoretical principles of numerical techniques and the associated error measures and apply them to find differentiation, integration and Differential Equations
	BT401.3	Ability to remember operators and use them to estimate the value between the given set of data (interpolation) and hence, apply it to estimate various real life scenarios.
	BT401.4	Analyze different types of statistical situations in which different probability distributions can be applied.
	BT401.5	Ability to analyze and evaluate the solution of ODE and PDE by using Laplace and Fourier Transform.
IT 402(Computer Architecture)	IT 402.1	Able to identify the basic structure of a processor, memory, Instructions to analyze the working of a system.
	IT 402.2	Understand the arithmetic operations, Analyze of hardwired and micro-programmed control units.
	IT 402.3	Interpreting and Analyzing the RISC and CISC ,Study of CPU.
	IT 402.4	Classify and analyse the memory structure ,Develop the concepts of memory management, interleaving and mapping.
	IT 402.5	Analyze the arithmetic and instructional pipelines.
IT 403(Analysis Design of Algorithm)	IT 403.1	Learn, Apply & Analyze the complexity in Divide and Conquer techniques for suitable problems
	IT 403.2	Apply and identify the Optimal Solution using the Greedy Approach for appropriate problems.
	IT 403.3	Compute and Analyze the problems by using Dynamic Programming approach
	IT 403.4	Apply the concept of Backtracking and Branch & Bound for solving the suitable problems, and enhance the performance of the algorithm
	IT 403.5	Learn the concept of NP completeness and Apply the various operations on tree & Graph data structures
IT 404(Analog and digital Communication)	IT404.1	Student will be able to understand and apply the basic concept digital electronics for digital circuit and system design.
	IT404.2	Students will be able to realize and describe the operation of combinational circuits.
	IT404.3	Students will be able to realize and describe the operation of sequential circuits .
	IT404.4	Students will be able to apply the fundamental knowledge of digital electronics principle for understanding and creating different (unipolar and bipolar) logic families.



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	IT404.5	Students will be able to apply the fundamental knowledge of analog and digital electronics principle for understanding and creating different analog to digital converter, multi-vibrator
IT 405(Database Management System)	IT405.1	Understand the basic concept of dbms and different issues involved in the design and implementation of a database system.
	IT405.2	Study the physical and logical database designs, database modeling, relational, hierarchical, and network models
	IT405.3	Understand and use data manipulation language to query, update, and manage a database
	IT405.4	Develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency.
	IT405.5	Design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
IT 406(Programming Practices- MATLAB)	IT 406.1	To study MATLAB environment, data types, variables, operators and assignment statements in MATLAB and able to use MATLAB for interactive computations.
	IT406.2	To implement the arithmetic operations and familiar with vector, matrices and array and their use..
	IT406.3	Able to use basic flow controls (if-else, for, while) to implement the control structures in MATLAB. Able to program scripts and functions using the MATLAB development environment and generate plots and export this for use in reports and presentations.
	IT 406.4	Able to create web pages using HTML Tags and Cascading Style Sheets.
IT407 (LINUX and programming) R	IT 407.1	Understand the basic commands used in LINUX operating system.
	IT 407.2	Learn important LINUX/UNIX library functions and system calls.
	IT 407.3	Write, Compile and Debug shell scripting in LINUX environment.
	IT 407.4	Implementation in R programming language and its function
	IT 407.5	Accessing and reading data into R



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B.Tech IT 5 th Sem		
Course Code/Course Name	Course Outcomes	
IT 501(Operating system)	IT 501.1	Gain knowledge of history of operating systems. Understand design issues associated with operating systems
	IT 501.2	Gain knowledge of various process management concepts including scheduling, synchronization, deadlocks
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B.Tech IT 6 th Sem		
Course Code/Course Name	Course Outcomes	
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	IT 603.4	Gain knowledge of semantic analysis and intermediate code generation.
	IT 603.5	Explore optimization techniques and code generation processes.
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	IT 605.5	Design GUI Applications in Python and evaluate different database operations Understand and Describe of object oriented programming and discuss advantages over procedure oriented programming
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	IT 607.1	Build a professional network that can be a resource for the student
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B.Tech IT 7 th Sem		
Course Code/Course Name	Course Outcomes	
IT7001(Cloud computing)	IT 7001.1	To define and understand the concepts ,key technologies, strength and limitation of cloud computing .
	IT 7001.2	To understand and analyse the architecture and infrastructure of cloud computing including SaaS, PaaS, IaaS, public cloud, private cloud and hybrid cloud and interfaces
	IT 7001.3	To understand and Applying the virtualization technology.
	IT 7001.4	To understand and compare the various data, cloud services to acquire efficient database for cloud storage.-
	IT 7001.5	Explaining and Illustrating the core issues of cloud computing, Cloud security fundamentals in cloud.
IT 7002(Object-oriented analysis and design)	IT 7002.1	Understand and apply the fundamental concepts of object-oriented programming
	IT 7002.2	Utilize object-oriented design methodologies to analyze and solve real-world problems, including the creation of UML diagrams
	IT 7002.3	Execute the software development lifecycle using object-oriented methodologies, covering requirements analysis, system design, and detailed design.
	IT 7002.4	Identify and implement appropriate design patterns (e.g., Singleton, Factory, Observer, Decorator, MVC) to solve common design problems.
	IT 7002.5	Create maintainable, reusable, and scalable applications using object-oriented programming languages
IT 7003(Wireless mobile computing.) and	IT 7003.1	Understand fundamentals of wireless communications
	IT 7003.2	Analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks
	IT 7003.3	Demonstrate basic skills for cellular networks design.
	IT 7003.4	Apply knowledge of TCP/IP extensions for mobile and wireless networking
	IT 7003.5	Acquire the knowledge to administrate and to maintain a Wireless LAN
IT 7004(E-commerce and Governance)	IT 7004.1	Understand E-commerce Models
	IT 7004.2	Implement digital marketing strategies to enhance online business presence.
	IT 7004.3	Evaluate e-governance frameworks and their impact on public administration.
	IT 7004.4	Identify and address legal, ethical, and regulatory issues related to e-commerce and governance.
	IT 7004.5	Design and develop secure e-commerce platforms ensuring data protection and privacy.
IT 7005(Artificial Intelligence)	IT 7005.1	To understand the basic concepts and techniques of artificial intelligence.
	IT 7005.2	To explore problem-solving methods and search strategies.
	IT 7005.3	To learn knowledge representation and reasoning methods


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	IT 7005.4	To study machine learning algorithms and their applications..
	IT 7005.5	To gain insights into advanced AI topics such as natural language processing and robotics.
IT7006(Project-I)	IT7006.1	Understand and identify the concept for the project.
	IT7006.2	Analyse the requirements of different tools and techniques for project
	IT7006.3	Design the various diagrams like data Flow diagram and use case diagrams for the project.
	IT7006.4	Design the software requirement specification for the project.
	IT7006.5	Understand and identify the future scope of the project.
IT 7007(Industrial Training)		
	IT7007.1	To gain practical exposure and hands-on experience in the relevant industry.
	IT7007.2	To apply theoretical knowledge to real-world problems and projects.
	IT7007.3	To develop professional skills and work ethics in an industrial environment.
	IT7007.4	To understand the workflow, processes, and organizational structure of the industry.
	IT7007.5	To enhance employability by acquiring industry-specific skills and knowledge.



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B.Tech IT 8 th Sem		
Course Code/Course Name	Course Outcomes	
IT 8001(Information security)	IT 8001.1	Understand key terms and concepts in information security and Cryptography and evaluate the cyber security needs of an organization.
	IT 8001.2	Acquire knowledge to secure computer systems, protect personal data, and secure computer networks in an organization
	IT 8001.3	Apply knowledge of various encryption algorithms and authentication mechanisms to secure information in computer systems and networks
	IT 8001.4	Understand principles of web security to secure network by monitoring and analyzing the nature of attacks and design/develop security architecture for an organization.
	IT 8001.5	Design operational and strategic information security strategies and policies.
IT-8002(Soft Computing)	IT 8002.1	Understand Soft Computing Techniques
	IT 8002.2	Design and implement fuzzy logic systems to handle uncertainty and approximate reasoning.
	IT 8002.3	Develop and apply neural network models for pattern recognition, classification, and prediction tasks.
	IT 8002.4	Apply genetic algorithms and other evolutionary techniques to solve optimization problems.
	IT 8002.5	Combine soft computing techniques to create hybrid models for complex problem-solving and decision-making.
IT 8003(Data Science)	IT8003.1	Understand Data Science Concepts
	IT8003.2	Utilize statistical techniques and algorithms to analyze and interpret data, deriving meaningful insights.
	IT8003.3	Develop and implement machine learning models for predictive analytics and classification tasks.
	IT8003.4	Create visualizations to effectively communicate data findings and insights using tools and libraries.
	IT8003.5	Apply big data technologies and frameworks to manage, process, and analyze large datasets.
IT 8004(Internet things) of	IT 8004.1	Explain the fundamental concepts, architecture, and technologies of the Internet of Things.
	IT 8004.2	Design and implement IoT systems including sensors, actuators, and communication protocols
	IT 8004.3	Utilize data analytics techniques to process and analyze data collected from IoT devices.
	IT 8004.4	Create and deploy IoT applications that integrate hardware and software components for practical use case.
	IT 8004.5	Identify and address security challenges and solutions in IoT systems to ensure data integrity and privacy.
IT 8005(Major Project-II)	IT 8005.1	Understand the conceptual clarity about project organization functionality and various stages of a project, prepared report in terms of conclusion

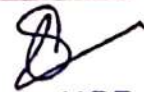


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	IT 8005.2	Classify the feasibility analysis in SDLC and project management using product and process metrics and choose the suitable process.
	IT 8005.3	Explore design alternative and designing of system modules according to the requirement.
	IT 8005.4	Designing of the architecture and show the data flow as well as control flow of the system
	IT 8005.5	Using a specific language, create a module based on real life based problem and present this in a team.
IT 8006(IOT Lab)	IT 8006.1	To understand the Components that forms part of IoT Architecture
	IT 8006.2	To Analyse the most appropriate IoT Devices and Sensors based on Case Studies
	IT 8006.3	To design Mobile Application which can interact with Sensors and Actuators.
	IT 8006.4	To evaluate and select the appropriate protocol for communication in IoT network
	IT 8006.5	To Apply IOT For solutions of societal challenge
IT 8007(Group discussion)	IT 8007.1	To develop effective communication skills and articulate thoughts clearly.
	IT 8007.2	To enhance critical thinking and the ability to analyze different perspectives.
	IT 8007.3	To foster teamwork and collaboration in a group setting.
	IT 8007.4	To improve the ability to present arguments logically and persuasively.
	IT 8007.5	To build confidence and public speaking skills in a group environment.



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