



## Department of Information Technology

### S.E. Sem III (R2016): Course Outcomes

#### ITC301 - APPLIED MATHEMATICS

Learners will be able to:	
ITC301.1	Apply the Set theory and Relation concepts.
ITC301.2	Apply the Functions and define the recursive functions.
ITC301.3	Apply Laplace transform to different applications.
ITC301.4	Apply Inverse Laplace transform to different applications.
ITC301.5	Identify the permutations and combinations.
ITC301.6	Define variable and also identify the mapping.

#### ITC302 - LOGIC DESIGN

Learners will be able to:	
ITC302.1	Achieve Knowledge and Awareness of various components to design stable analog circuits.
ITC302.2	Represent numbers and perform arithmetic operations.
ITC302.3	Minimize the Boolean expression using Boolean algebra and design it using logic gates
ITC302.4	Analyse and design combinational circuit.
ITC302.5	Design and develop sequential circuits
ITC302.6	Translate real world problems into digital logic formulations using VHDL.

#### ITC303 - DATA STRUCTURES AND ANALYSIS

Learners will be able to:	
ITC303.1	Choose appropriate data structures as applied to specified problem definition.
ITC303.2	Implement operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
ITC303.3	Apply concepts learned in various domains like DBMS, compiler construction, Intelligent System etc.



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ITC303.4	Select appropriate sorting/searching technique for given problem.
ITC303.5	Implement specified sorting/searching technique for given problem.
ITC303.6	Calculate the complexity of given Algorithms

### ITC304 - DATABASE MANAGEMENT SYSTEM

Learners will be able to:	
ITC304.1	Understand the features of database management systems and Relational database
ITC304.2	Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra
ITC304.3	Create and populate a RDBMS for a real life application, with constraints and keys, using SQL.
ITC304.4	Retrieve any type of information from a data base by formulating complex queries in SQL.
ITC304.5	Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database.
ITC304.6	Build indexing mechanisms for efficient retrieval of information from a database

### ITC305- PRINCIPLE OF COMMUNICATIONS

Learners will be able to:	
ITC305.1	Differentiate analog and digital communication systems
ITC305.2	Identify different types of noise occurred, its minimization and able to apply Fourier analysis in frequency & time domain to quantify bandwidth requirement of variety of analog and digital communication systems.
ITC305.3	Design generation & detection AM, DSB, SSB, FM transmitter and receiver.
ITC305.4	Apply sampling theorem to quantify the fundamental relationship between channel bandwidth, digital symbol rate and bit rate
ITC305.5	Explain different types of line coding techniques for generation and detection of signals.
ITC305.6	Describe Electromagnetic Radiation and propagation of waves.



## Department of Information Technology

### ITL301 - DIGITAL DESIGN LAB

Learners will be able to:	
ITL301.1	Minimize the Boolean algebra and design it using logic gates.
ITL301.2	Analyse and design combinational circuit.
ITL301.3	Realise given function using combinational circuit.
ITL301.4	Design and develop sequential circuits
ITL301.5	Implement digital systems using programmable logic devices
ITL301.6	Translate real world problems into digital logic formulations using VHDL.

### ITL302 - DATA STRUCTURES LAB

Learners will be able to:	
ITL302.1	Select appropriate data structures as applied to specified problem definition.
ITL302.2	Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures.
ITL302.3	Students will be able to implement Linear and Non-Linear data structures.
ITL302.4	Implement appropriate sorting/searching technique for given problem.
ITL302.5	Design advance data structure using Non-Linear data structure.
ITL302.6	Determine and analyze the complexity of given Algorithms.

### ITL303 - SQL LAB

Learners will be able to:	
ITL303.1	Construct problem definition statements for real life applications and implement a database for the same.
ITL303.2	Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra.



## Department of Information Technology

ITL303.3	Create and populate a RDBMS, using SQL.
ITL303.4	Write queries in SQL to retrieve any type of information from a data base.
ITL303.5	Analyze and apply concepts of normalization to design an optimal database.
ITL303.6	Implement indexes for a database using techniques like B or B+ trees.

### ITL304 - JAVA PROGRAMMING LAB

Learners will be able to:	
ITL304.1	Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
ITL304.2	Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
ITL304.3	Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
ITL304.4	Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
ITL304.5	Identify and describe common abstract user interface components to design GUI in Java using Applet & AWT along with response to events
ITL304.6	Identify, Design & develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture



## Department of Information Technology

### S.E. Sem IV (R2016): Course Outcomes

#### ITC401 - APPLIED MATHEMATICS IV

Learners will be able to:	
ITC401.1	Apply the Number Theory to different applications using theorem.
ITC401.2	Apply probability and understand PDF.
ITC401.3	Understand sampling theory and correlation.
ITC401.4	Apply the graphs and trees concepts to different applications.
ITC401.5	Understand group's theory.
ITC401.6	Understand the Lattice theory.

#### ITC402 - COMPUTER NETWORKS

Learners will be able to:	
ITC402.1	Describe the functions of each layer in OSI and TCP/IP model.
ITC402.2	Explain the functions of Application layer and Presentation layer paradigms and Protocols.
ITC402.3	Describe the Session layer design issues and Transport layer services.
ITC402.4	Classify the routing protocols and analyze how to assign the IP addresses for the given network.
ITC402.5	Describe the functions of data link layer and explain the protocols.
ITC402.6	Explain the types of transmission media with real time applications.



## Department of Information Technology

### ITC403 - OPERATING SYSTEM

Learners will be able to:	
ITC403.1	Describe the important computer system resources and the role of operating system in their management policies and algorithms.
ITC403.2	Understand the process management policies and scheduling of processes by CPU
ITC403.3	Evaluate the requirement for process synchronization and coordination handled by operating system
ITC403.4	Describe and analyze the memory management and its allocation policies.
ITC403.5	Identify use and evaluate the storage management policies with respect to different storage management technologies.
ITC403.6	Identify the need to create the special purpose operating system.

### ITC404 - COMPUTER ORGANIZATION AND ARCHITECTURE

Learners will be able to:	
ITC404.1	Describe basic organization of computer and the architecture of 8086 microprocessor.
ITC404.2	Implement assembly language program for given task for 8086 microprocessor.
ITC404.3	Demonstrate control unit operations and conceptualize instruction level parallelism.
ITC404.4	Demonstrate and perform computer arithmetic operations on integer and real numbers.
ITC404.5	Categorize memory organization and explain the function of each element of a memory hierarchy.
ITC404.6	Identify and compare different methods for computer I/O mechanisms.



## Department of Information Technology

### ITC405 - AUTOMATA THEORY

Learners will be able to:	
ITC405.1	Understand, design, construct, analyze and interpret Regular languages, Expression and Grammars.
ITC405.2	Design different types of Finite Automata and Machines as Acceptor, Verifier and Translator.
ITC405.3	Understand, design, analyze and interpret Context Free languages, Expression and Grammars.
ITC405.4	Design different types of Push down Automata as Simple Parser.
ITC405.5	Design different types of Turing Machines as Acceptor, Verifier, Translator and Basic computing machine.
ITC405.6	Compare, understand and analyze different languages, grammars, Automata and Machines and appreciate their power and convert Automata to Programs and Functions

### ITL401 - NETWORKING LAB

Learners will be able to:	
ITL403.1	Execute and evaluate network administration commands and demonstrate their use in different network scenarios
ITL403.2	Demonstrate the installation and configuration of network simulator.
ITL403.3	Demonstrate and measure different network scenarios and their performance behavior.
ITL403.4	Analyze the contents the packet contents of different protocols.
ITL403.5	Implement the socket programming for client server architecture.
ITL403.6	Design and setup a organization network using packet tracer.



## Department of Information Technology

### ITL402 - UNIX LAB

Learners will be able to:	
ITL402.1	Identify the basic Unix general purpose commands.
ITL402.2	Apply and change the ownership and file permissions using advance Unix commands.
ITL402.3	Use the awk, grep, perl scripts.
ITL402.4	Implement shell scripts and sed.
ITL402.5	Apply basic of administrative task.
ITL402.6	Apply networking Unix commands.

### ITL403 - MICROPROCESSOR PROGRAMMING LAB

Learners will be able to:	
ITL403.1	Apply the fundamentals of assembly level programming of microprocessors.
ITL403.2	Build a program on a microprocessor using arithmetic & logical instruction set of 8086.
ITL403.3	Develop the assembly level programming using 8086 loop instruction set.
ITL403.4	Write programs based on string and procedure for 8086 microprocessor.
ITL403.5	Analyze abstract problems and apply a combination of hardware and software to address the problem
ITL403.6	Make use of standard test and measurement equipment to evaluate digital interfaces.



## Department of Information Technology

### ITL404 - PYTHON LAB

Learners will be able to:	
ITL404.1	Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
ITL404.2	Express different Decision Making statements and Functions
ITL404.3	Interpret Object oriented programming in Python
ITL404.4	Understand and summarize different File handling operations
ITL404.5	Explain how to design GUI Applications in Python and evaluate different database operations
ITL404.6	Design and develop Client Server network applications using Python



## Department of Information Technology

### T.E. Sem V (R2016): Course Outcomes

#### ITC501 - MICROCONTROLLER AND EMBEDDED PROGRAMMING

Learners will be able to:	
ITC501.1	Explain the embedded system concepts and architecture of embedded system
ITC501.2	Describe the architecture of 8051 microcontroller and write embedded program for 8051 microcontroller.
ITC501.3	Design the interfacing for 8051 microcontroller.
ITC501.4	Understand the concepts of ARM architecture.
ITC501.5	Demonstrate the open source RTOS and solve the design issues for the same.
ITC501.6	Select elements for an embedded systems tool.

#### ITC502 - INTERNET PROGRAMMING

Learners will be able to:	
ITC502.1	Implement interactive web page(s) using HTML,CSS and JavaScript.
ITC502.2	Design a responsive web site using HTML5 and CSS3.
ITC502.3	Demonstrate Rich Internet Application.
ITC502.4	Build Dynamic web site using server side PHP Programming and Database connectivity.
ITC502.5	Describe and differentiate different Web Extensions and Web Services.
ITC502.6	Demonstrate web application using Python web Framework-Django.



## Department of Information Technology

### ITC503 - ADVANCED DATA MANAGEMENT TECHNOLOGY

Learners will be able to:	
ITC503.1	Explain and understand the concept of a transaction and how ACID properties are maintained when concurrent transaction occur in a database
ITC503.2	Measure query costs and design alternate efficient paths for query execution.
ITC503.3	Apply sophisticated access protocols to control access to the database.
ITC503.4	Implement alternate models like Distributed databases and Design applications using advanced models like mobile, spatial databases
ITC503.5	Organize strategic data in an enterprise and build a data Warehouse.
ITC503.6	Analyze data using OLAP operations so as to take strategic decisions

### ITC504 - CRYPTOGRAPHY & NETWORK SECURITY

Learners will be able to:	
ITC504.1	Identify information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fields and number theory.
ITC504.2	Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
ITC504.3	Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes
ITC504.4	Apply different digital signature algorithms to achieve authentication and create secure applications
ITC504.5	Apply network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like SSL, IPSec, and PGP.
ITC504.6	Apply the knowledge of cryptographic utilities and authentication mechanisms to design secure applications



## Department of Information Technology

### ITL501 - INTERNET PROGRAMMING LAB

Learners will be able to:	
ITL501.1	Design a basic web site using HTML5 and CSS3 to demonstrate responsive web design.
ITL501.2	Implement dynamic web pages with validation using JavaScript objects by applying different event handling mechanism.
ITL501.3	Use AJAX Programming Technique to develop RIA
ITL501.4	Develop simple web application using server side PHP programming and Database Connectivity using MySQL.
ITL501.5	Build well-formed XML Document and implement Web Service using Java.
ITL501.6	Demonstrate simple web application using Python Django Framework.

### ITL502 - SECURITY LAB

Learners will be able to:	
ITL502.1	Apply the knowledge of symmetric cryptography to implement simple ciphers
ITL502.2	Analyze and implement public key algorithms like RSA and El Gamal
ITL502.3	Analyze and evaluate performance of hashing algorithms
ITL502.4	Explore the different network reconnaissance tools to gather information about networks
ITL502.5	Use tools like sniffers, port scanners and other related tools for analyzing packets in a network.
ITL502.6	Apply and set up firewalls and intrusion detection systems using open source technologies and to explore email security.



## Department of Information Technology

### ITL503 - OLAP LAB

Learners will be able to:	
ITL503.1	Implement simple query optimizers and design alternate efficient paths for query execution.
ITL503.2	Simulate the working of concurrency protocols, recovery mechanisms in a database
ITL503.3	Design applications using advanced models like mobile, spatial databases.
ITL503.4	Implement a distributed database and understand its query processing and transaction processing mechanisms
ITL503.5	Build a data warehouse
ITL503.6	Analyze data using OLAP operations so as to take strategic decisions.

### ITL504 - IOT (MINI PROJECT) LAB

Learners will be able to:	
ITL504.1	Identify the requirements for the real world problems.
ITL504.2	Conduct a survey of several available literatures in the preferred field of study.
ITL504.3	Study and enhance software/ hardware skills.
ITL504.4	Demonstrate and build the project successfully by hardware requirements, coding, emulating and testing.
ITL504.5	To report and present the findings of the study conducted in the preferred domain
ITL504.6	Demonstrate an ability to work in teams and manage the conduct of the research study.



## Department of Information Technology

### ITL505 - BUSINESS COMMUNICATION AND ETHICS

Learners will be able to:	
ITL505.1	Design a technical document using precise language, suitable vocabulary and apt style.
ITL505.2	Develop the life skills/ interpersonal skills to progress professionally by building stronger relationships.
ITL505.3	Demonstrate awareness of contemporary issues knowledge of professional and ethical responsibilities.
ITL505.4	Apply the traits of a suitable candidate for a job/higher education, upon being trained in the techniques of holding a group discussion, facing interviews and writing resume/SOP.
ITL505.5	Deliver formal presentations effectively implementing the verbal and non-verbal skills.

### ITDLO5011 - ADVANCED DATA STRUCTURES & ANALYSIS OF ALGORITHMS

Learners will be able to:	
ITDLO5011.1	Choose appropriate advanced data structure for given problem.
ITDLO5011.2	Calculate complexity.
ITDLO5011.3	Select appropriate design techniques to solve real world problems.
ITDLO5011.4	Apply the dynamic programming technique to solve the problems.
ITDLO5011.5	Apply the greedy programming technique to solve the problems.
ITDLO5011.6	Select a proper pattern matching algorithm for given problem.

### ITDLO5012 - IMAGE PROCESSING

Learners will be able to:	
ITDLO5012.1	Remember the fundamental concepts of image processing
ITDLO5012.2	Explain different Image enhancement techniques
ITDLO5012.3	Understand and review image transforms
ITDLO5012.4	Analyze the basic algorithms used for image processing & image compression with morphological image processing



## Department of Information Technology

ITDLO5012.5	Contrast Image Segmentation and Representation
ITDLO5012.6	Design & Synthesize Color image processing and its real world applications

### ITDLO5013 - E-COMMERCE & E-BUSINESS

Learners will be able to:	
ITDLO5013.1	Define and differentiate various types of E-commerce.
ITDLO5013.2	Describe Hardware and Software Technologies for E-commerce.
ITDLO5013.3	Explain payment systems for E-commerce
ITDLO5013.4	Describe the process of Selling and Marketing on web.
ITDLO5013.5	Define and Describe E-business and its Models.
ITDLO5013.6	Discuss various E-business Strategies.

### ITDLO5015 - COMPUTER GRAPHICS & VIRTUAL REALITY

Learners will be able to:	
ITDLO5015.1	To list the basic concepts used in computer graphics.
ITDLO5015.2	To implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping.
ITDLO5015.3	To describe the importance of viewing and projections.
ITDLO5015.4	To define the fundamentals of animation, virtual reality and its related technologies.
ITDLO5015.5	To understand a typical graphics pipeline
ITDLO5015.6	To design an application with the principles of virtual reality



## Department of Information Technology

### T.E. Sem VI (R2016): Course Outcomes

#### ITC601 - SOFTWARE ENGINEERING WITH PROJECT MANAGEMENT

Learners will be able to:	
ITC601.1	Define various software application domains and remember different process model used in software development.
ITC601.2	Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
ITC601.3	Convert the requirements model into the design model and demonstrate use of software and user-interface design principles.
ITC601.4	Distinguish among SCM and SQA and can classify different testing strategies and tactics and compare them.
ITC601.5	Justify role of SDLC in Software Project Development and they can evaluate importance of Software Engineering in PLC.
ITC601.6	Generate project schedule and can construct, design and develop network diagram for different type of Projects. They can also organize different activities of project as per Risk impact factor.

#### ITC602 - DATA MINING AND BUSINESS INTELLIGENCE

Learners will be able to:	
ITC602.1	Demonstrate an understanding of the importance of data mining and the principles of business intelligence
ITC602.2	Organize and Prepare the data needed for data mining using pre preprocessing techniques
ITC602.3	Perform exploratory analysis of the data to be used for mining.
ITC602.4	Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets.
ITC602.5	Define and apply metrics to measure the performance of various data mining algorithms.
ITC602.6	Apply BI to solve practical problems : Analyze the problem domain, use the data collected in enterprise apply the appropriate data mining technique, interpret and visualize the results and provide decision support.



## Department of Information Technology

### ITC603 - CLOUD COMPUTING & SERVICES

Learners will be able to:	
ITC603.1	Define Cloud Computing and memorize the different Cloud service and deployment models
ITC603.2	Describe importance of virtualization along with their technologies.
ITC603.3	Use and Examine different cloud computing services
ITC603.4	Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing
ITC603.5	Describe the key components of Amazon web Service
ITC603.6	Design & develop backup strategies for cloud data based on features.

### ITC604 - WIRELESS NETWORK

Learners will be able to:	
ITC604.1	Explain the basic concepts of wireless network and wireless generations.
ITC604.2	Demonstrate the different wireless technologies such as CDMA, GSM, GPRS etc
ITC604.3	Appraise the importance of Ad-hoc networks such as MANET and VANET and Wireless Sensor networks
ITC604.4	Describe and judge the emerging wireless technologies standards such as WLL, WLAN, WPAN, WMAN.
ITC604.5	Explain the design considerations for deploying the wireless network infrastructure.
ITC604.6	Differentiate and support the security measures, standards. Services and layer wise security considerations.

### ITL601 - SOFTWARE DESIGN LAB

Learners will be able to:	
ITL601.1	Sketch a Modeling with UML.
ITL601.2	Deploy Structural Modeling.



## Department of Information Technology

ITL601.3	Deploy Behavioural Modeling.
ITL601.4	Deploy Architectural Modeling.
ITL601.5	Examine estimation about schedule and cost for project development.
ITL601.6	Select project development tool.

### ITL602 - BUSINESS INTELLIGENCE LAB

Learners will be able to:	
ITL602.1	Identify sources of Data for mining and perform data exploration
ITL602.2	Organize and prepare the data needed for data mining algorithms in terms of attributes and class inputs, training, validating, and testing files.
ITL602.3	Implement the appropriate data mining methods like classification, clustering or association mining on large data sets using open source tools like WEKA
ITL602.4	Implement various data mining algorithms from scratch using languages like Python/Java etc.
ITL602.5	Evaluate and compare performance of some available BI packages
ITL602.6	Apply BI to solve practical problems : Analyze the problem domain, use the data collected in enterprise apply the appropriate data mining technique, interpret and visualize the results and provide decision support.

### ITL603 - CLOUD SERVICE DESIGN LAB

Learners will be able to:	
ITL603.1	Define & implement Virtualization using different types of Hypervisors
ITL603.2	Describe steps to perform on demand Application delivery using Ulteo .
ITL603.3	Examine the installation and configuration of Open stack cloud
ITL603.4	Analyze and understand the functioning of different components involved in Amazon web services cloud platform.
ITL603.5	Describe the functioning of Platform as a Service
ITL603.6	Design & Synthesize Storage as a service using own Cloud



## Department of Information Technology

### ITL604 - SENSOR NETWORK LAB

Learners will be able to:	
ITL604.1	Identify the requirements for the real world problems.
ITL604.2	Conduct a survey of several available literatures in the preferred field of study.
ITL604.3	Study and enhance software/ hardware skills.
ITL604.4	Demonstrate and build the project successfully by hardware/sensor requirements, coding, emulating and testing.
ITL604.5	To report and present the findings of the study conducted in the preferred domain
ITL604.6	Demonstrate an ability to work in teams and manage the conduct of the research study.

### ITM605 - MINI-PROJECT

Learners will be able to:	
ITM605.1	Discover potential research areas in the field of IT
ITM605.2	Conduct a survey of several available literature in the preferred field of study
ITM605.3	Compare and contrast the several existing solutions for research challenge
ITM605.4	Demonstrate an ability to work in teams and manage the conduct of the research study.
ITM605.5	Formulate and propose a plan for creating a solution for the research plan identified
ITM605.6	To report and present the findings of the study conducted in the preferred domain



## Department of Information Technology

### ITDLO6021 - ADVANCE INTERNET PROGRAMMING

Learners will be able to:	
ITDLO6021.1	Determine SEO Objectives and Develop SEO plan prior to Site Development.
ITDLO6021.2	Explain Search Engine Optimization Techniques and Develop Keyword Generation.
ITDLO6021.3	Describe different Web Services Standards.
ITDLO6021.4	Develop Rich Internet Application using proper choice of Framework.
ITDLO6021.5	Apply multiple quantitative and qualitative methods for web analytics 2.0.
ITDLO6021.6	Explain Web 3.0 and Semantic web standards

### ITDLO6023 - DIGITAL FORENSICS

Learners will be able to:	
ITDLO6023.1	Define the concept of ethical hacking and its associated applications in Information Communication Technology (ICT) world.
ITDLO6023.2	Underline the need of digital forensic and role of digital evidences.
ITDLO6023.3	Explain the methodology of incident response and various security issues in ICT world, and identify digital forensic tools for data collection.
ITDLO6023.4	Recognize the importance of digital forensic duplication and various tools for analysis to achieve adequate perspectives of digital forensic investigation in various applications /devices like Windows/Unix system.
ITDLO6023.5	Apply the knowledge of IDS to secure network and performing router and network analysis
ITDLO6023.6	List the method to generate legal evidence and supporting investigation reports and will also be able to use various digital forensic tools.



## Department of Information Technology

### B.E. Sem VII (R2012): Course Outcomes

#### ITC701 - SOFTWARE PROJECT MANAGEMENT

Learners will be able to:	
ITC701.1	Assess an IT project by establishing a business case and prepare a project proposal.
ITC701.2	Develop a project charter and project plan.
ITC701.3	Develop a work breakdown structure for an IT project.
ITC701.4	Identify task inter-dependencies, construct and analyze a network diagram.
ITC701.5	Understand the constraints of resources in a project and able to level them.
ITC701.6	Analyze the performance of the project with the baseline using MS Project and also ensure the quality of the project using various quality standards and evaluate the end product.

#### ITC702 - CLOUD COMPUTING

Learners will be able to:	
ITC702.1	Differentiate various computing techniques.
ITC702.2	Implement different types of virtualization techniques.
ITC702.3	Analyze various cloud application requirement.
ITC702.4	Create private cloud using open source.
ITC702.5	Analyze risk involved in cloud computing.
ITC702.6	Deploy cloud applications using app engine and AWS



## Department of Information Technology

### ITC703 - INTELLIGENT SYSTEM

Learners will be able to:	
ITC703.1	Identify various types of intelligent agents and their task environments and thereby know the fundamentals of Intelligent Systems.
ITC703.2	Choose an appropriate knowledge representation scheme and reasoning technique to solve AI problems.
ITC703.3	Analyse and formulate the problem as a state space search and select an appropriate searching techniques to solve the problem.
ITC703.4	Apply appropriate learning and inference technique in general and uncertain domain in intelligent systems.
ITC703.5	Generate plan for a problem using planning language (like STRIPS) from various types of planning strategies.
ITC703.6	Design and Develop expert systems (using LISP and SWI-Prolog language API) by following the development phases of expert system.

### ITC704 - WIRELESS TECHNOLOGY

Learners will be able to:	
ITC704.1	Describe frequency band, spectrum, air interface and channel structure in Telecommunication.
ITC704.2	Understand GSM, GPRS, Bluetooth model and evolution of mobile networks.
ITC704.3	Develop the wireless and wired communication architecture.
ITC704.4	Design Ad-hoc networks, clustering and their usage in practical world using Packet Tracer.
ITC704.5	Apply various routing, communication protocols and Multiple accesses using NS2.
ITC704.6	Assess QoS over wired and wireless channels and describe issues relating to security and privacy of user data and user behaviour in mobile wireless environment.



## Department of Information Technology

### ITC7051 - IMAGE PROCESSING

Learners will be able to:	
ITC7051.1	Apply steps in logical order to perform digital image processing.
ITC7051.2	Produce an enhanced image by using various techniques of image enhancement in spatial and frequency domain.
ITC7051.3	Produce a segmented image by using various image segmentation techniques and also represent and describe these segments using different types of descriptors.
ITC7051.4	Construct a compressed image using lossless and lossy compression techniques for efficient storage and transmission.
ITC7051.5	Apply morphological operations on an image for extracting image components that are useful in representing regions and shapes
ITC7051.6	Implement various image processing operations using MATLAB and apply these operations to various applications of Image Processing

### ITC7053 - E-COMMERCE AND E-BUSINESS

Learners will be able to:	
ITC7053.1	Understand the difference between traditional business practices and E-Business practices
ITC7053.2	Identify fundamental components in E-Business including revenue models, payment options, etc. towards building a different type of E-Business solutions.
ITC7053.3	Demonstrate technological aspects like client side programming (Dreamweaver, Front page), server side programming (PHP), Database connectivity and security aspects with respect to E commerce, integration of web services.
ITC7053.4	Devise numerous business strategies for online advertising, online marketing to accelerate their business growth.
ITC7053.5	Propose a business model for web expansion within given information system and connect e-business enterprise strategy with models and methods of information system development using ERP, CRM and SCM.
ITC7053.6	Develop E-Commerce websites using various server side and client side programming languages using ASP.Net, JavaScript, PHP, etc.



## Department of Information Technology

### ITP706 - PROJECT -A

Learners will be able to:	
ITP706.1	Inculcate the ability to read , understand and study IEEE papers in various domains of interest
ITP706.2	Ability to identify domain of interest and do literature survey/analysis in domain of interest.
ITP706.3	Capability to do indepth analysis of selected topic from research domain
ITP706.4	Ability to identify technique/algorithm for developing a project
ITP706.5	Ability to write good technical papers and project report.



## Department of Information Technology

### B.E. Sem VIII (R2012): Course Outcomes

#### ITC801 - SOFTWARE NETWORK MANAGEMENT AND RETRIEVAL

Learners will be able to:	
ITC801.1	1. Appraise efficient storage techniques to manage voluminous digital data effectively.
ITC801.2	2. Estimate problem statement / requirements with respect to design, sensitivity / criticality of information to determine its value and appropriate storage solution.
ITC801.3	3. Describe storage networking technologies such as RAID, FC-SAN, NAS, IP-SAN, data archival solution, CAS and storage virtualization technologies and their benefits.
ITC801.4	4. Assess business continuity solutions to achieve safety of valuable information using effective backup and recovery techniques.
ITC801.5	5. Describe essential quality and security implications to help information, preserve its appropriate value for society.
ITC801.6	6. Understand and apply various information retrieval techniques in storage network.

#### ITC802 - BIG DATA ANALYTICS

Learners will be able to:	
ITC802.1	Identify the key issues in big data management and its associated applications in intelligent business and scientific computing.
ITC802.2	Design solutions using big data technologies such as Map Reduce and the ability to implement scalable / parallel / distributed algorithms
ITC802.3	Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
ITC802.4	Assess adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.
ITC802.5	Design business model using No SQL



## Department of Information Technology

### ITC803 - COMPUTER SIMULATION AND MODELING

Learners will be able to:	
ITC803.1	Develop a simulation model for problems from various domains like business, science, engineering, industry, services, etc. by following a suitable simulation world view and perform simulation
ITC803.2	Understand the role of probability and statistics in simulation and modelling.
ITC803.3	Select right queueing model for different systems on the basis of various characteristics and able to estimate various performance measures.
ITC803.4	Generate pseudorandom numbers using different techniques and perform statistical tests to measure the quality (uniformity & independence) of generated random numbers.
ITC803.5	Design generator for various discrete and continuous distributions and generate the random variates from it.
ITC803.6	Select the right model of input data using various techniques.
ITC803.7	Verify and validate the simulated model and also analyze the output (data) generated by simulation using different methods.

### ITC8041- ENTERPRISE RESOURCE PLANNING

Learners will be able to:	
ITC8041.1	Understand the concepts of reengineering and how they relate to ERP system implementations
ITC8041.2	Identify all components in an ERP system and relationships among those components
ITC8041.3	Examine various steps and activities involved in ERP implementation life cycle
ITC8041.4	Demonstrate the use of ERP tools like Microsoft Dynamics and JD Edwards to understand the implementation process
ITC8041.5	Assess various methods to determine the correct purchasing quantity and right time to buy an item, and apply these methods to material management



## Department of Information Technology

### ITC8045- Soft Computing

Learners will be able to:	
ITC8045.1	Analyze the real world problems scenarios and select from various soft computing and adaptive neuro-fuzzy techniques.
ITC8045.2	Apply Fuzzy logic to solve real world problems.
ITC8045.3	Select and Design appropriate type of Neural Networks to solve real world problems.
ITC8045.4	Design and apply neuro-fuzzy models for approximate reasoning.
ITC8045.5	Apply optimization techniques using genetic algorithms.

### ITP805 - PROJECT -A

Learners will be able to:	
ITP805.1	Implement solutions to real world problems.
ITP805.2	Apply knowledge of software engineering principles and software development cycle (Implementation, testing phases).
ITP805.3	Apply System integration skills, Documentation skills, Project management skills, Problem solving skills.
ITP805.4	Work efficiently and constructively as a team.
ITP805.5	Develop oral as well as written presentation skills