COURSE OUTCOMES OF COMPUTER ENGINEERING

ACADEMIC YEAR: 2019-20

S E. Computer Engineering (Semester-III)

Course Code	Course Name
CSC301	Applied Mathematics -III

Course outcomes:

- Understand complex variable theory, application of harmonic conjugate to get orthogonal trajectories and analytic function.
- Plot the image of the curve by a complex transformation from z-plane to w-plane.
- Expand the periodic function by using Fourier series and complex form of Fourier series.
- Understand the concept of Laplace transform and inverse Laplace transform of various functions and its application to solve ordinary differential equations.
- Apply the concept of Z- transformation and its inverse of the given sequence.
- Apply the concept of Correlation and Regression to the engineering problems.

Course Code	Course Name
CSC302	Digital Logic Design and Analysis

Course Outcomes:

- To understand different number systems and their conversions.
- To analyze and minimize Boolean expressions.
- To design and analyze combinational circuits.
- To design and analyze sequential circuits
- To understand the basic concepts of VHDL.
- To study basics of TTL and CMOS Logic families.

Course Code	Course Name
CSC303	Discrete Mathematics

Course Outcomes:

- Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving.
- Ability to reason logically.
- Ability to understand relations, Diagraph and lattice..
- Ability to understand use of functions, graphs and their use in programming applications.
- Understand use of groups and codes in Encoding-Decoding
- Apply discrete structures into other computing problems such as formal specification, verification, artificial intelligence, cryptography, Data Analysis and Data Mining etc.

Course Code	Course Name
CSC304	Electronic Circuits and Communication Fundamentals

Course Outcomes:

- To understand the use of semiconductor devices in circuits and analyze them.
- To understand importance of oscillators and power amplifiers in communication system.
- To understand basic concepts of operational amplifier and their applications.
- To understand the fundamental concepts of electronic communication
- To apply knowledge of electronic devices and circuits to communication applications.
- To study basic concepts of information theory.

Course Code	Course Name
CSC305	Data Structures

Course Outcomes:

- Students will be able to implement various linear and nonlinear data structures.
- Students will be able to handle operations like insertion, deletion, searching and traversing on various data structures.
- Students will be able to select appropriate sorting technique for given problem.
- Students will be able to select appropriate searching technique for given problem.
- Students will be able to apply the learned concepts in various domains like DBMS and Compiler Construction.
- Students will be able to choose appropriate data structure for specified problem domain.

S. E. Computer Engineering (Semester-IV)

Course Code	Course Name
CSC401	Applied Mathematics-IV

Course Outcomes:

- Students in this course will be able to apply the method of solving complex integration, computing residues & evaluate various contour integrals.
- Demonstrate ability to manipulate matrices and compute Eigen values and Eigen vectors.
- Apply the concept of probability distribution to the engineering problems.
- Apply the concept of sampling theory to the engineering problems.
- Use matrix algebra with its specific rules to solve the system of linear equation, using concept of Eigen value and Eigen vector to the engineering problems.
- Apply the concept of Linear & Non-Linear Programming Problem to the engineering problems.

Course Code	Course Name
CSC402	Analysis of Algorithms

Course Outcomes:

- Analyze the running time and space complexity of algorithms.
- Describe, apply and analyze the complexity of divide and conquer strategy.
- Describe, apply and analyze the complexity of greedy strategy.
- Describe, apply and analyze the complexity of dynamic programming strategy.
- Explain and apply backtracking, branch and bound and string matching techniques to deal with some hard problems.
- Describe the classes P, NP, and NP-Complete and be able to prove that a certain problem is NP-Complete.

Course Code	Course Name
CSC403	Computer Organization and Architecture

Course Outcomes:

- To describe basic structure of the computer system.
- To demonstrate the arithmetic algorithms for solving ALU operations.
- To describe instruction level parallelism and hazards in typical processor pipelines.
- To describe superscalar architectures, multi-core architecture and their advantages
- To demonstrate the memory mapping techniques.
- To Identify various types of buses, interrupts and I/O operations in a computer system

Course Code	Course Name
CSC404	**Computer Graphics**

Course Outcomes :

- Understand the basic concepts of Computer Graphics.
- Demonstrate various algorithms for scan conversion and filling of basic objects and their comparative analysis.
- Apply geometric transformations, viewing and clipping on graphical objects.
- Explore solid model representation techniques and projections.
- Understand visible surface detection techniques and illumination models.

Course Code	**Course Name**
CSC405	**Operating System**

Course Outcomes:

- Understand role of Operating System in terms of process, memory, file and I/O management.
- Apply and analyse the concept of a process, thread, mutual exclusion and deadlock.
- Evaluate performance of process scheduling algorithms and IPC.
- Apply and analyse the concepts of memory management techniques.
- Evaluate the performance of memory allocation and replacement techniques.
- Apply and analyze different techniques of file and I/O management.

T. E. Computer Engineering (Semester-V)

Course Code	Course Name
CSC501	Microprocessor

Course outcomes:

- Describe architecture of x86 processors.
- Interpret the instructions of 8086 and write assembly and Mixed language programs.
- Explain the concept of interrupts
- Identify the specifications of peripheral chip
- Design 8086 based system using memory and peripheral chips
- Appraise the architecture of advanced processors

Course Code	Course Name
CSC502	Database Management System

Course outcomes:

- Understand the fundamentals of a database systems
- Design and draw ER and EER diagram for the real life problem.
- Convert conceptual model to relational model and formulate relational algebra queries.
- Design and querying database using SQL.
- Analyze and apply concepts of normalization to relational database design.
- Understand the concept of transaction, concurrency and recovery.

Course Code	Course Name
CSC 503	Computer Network

Course Outcomes:

- Demonstrate the concepts of data communication at physical layer and compare ISO - OSI model with TCP/IP model.
- Demonstrate the knowledge of networking protocols at data link layer.
- Design the network using IP addressing and subnetting / supernetting schemes.
- Analyze various routing algorithms and protocols at network layer.
- Analyze transport layer protocols and congestion control algorithms.
- Explore protocols at application layer .

Course Code	Course Name
CSC504	Theory of Computer Science

Course Outcomes:

- Identify the central concepts in theory of computation and differentiate between deterministic and nondeterministic automata, also obtain equivalence of NFA and DFA.
- Infer the equivalence of languages described by finite automata and regular expressions.
- Devise regular, context free grammars while recognizing the strings and tokens.
- Design pushdown automata to recognize the language.
- Develop an understanding of computation through Turing Machine.
- Acquire fundamental understanding of decidability and undecidability.

Course Code	Course Name
CSDLO5011	Multimedia System

Course outcomes:

- To identify basics of multimedia and multimedia system architecture.
- To understand different multimedia components.
- To explain file formats for different multimedia components.
- To analyze the different compression algorithms.
- To describe various multimedia communication techniques.
- To apply different security techniques in multimedia environment.

Course Code	Course Name
CSDLO5012	Advanced Operating Systems

Course Outcomes:

- Demonstrate understanding of design issues of advanced operating systems and compare different types of operating systems.
- Analyse design aspects and data structures used for file subsystem, memory subsystem and process subsystem of Unix OS.
- Demonstrate understanding of different architectures used in Multiprocessor OS and analyse the design and data structures used in Multiprocessor operating systems.
- Differentiate between threads and processes and compare different processor scheduling algorithms used in Multiprocessor OS
- Classify Real Time OS and analyse various real time scheduling algorithms.
- Explore architectures and design issues of Mobile OS,Virtual OS, Cloud OS.

Course Code	Course Name
CSDLO5013	Advanced Algorithm

Course Outcomes:

- Describe analysis techniques for algorithms.
- Identify appropriate data structure and design techniques for different problems
- Identify appropriate algorithm to be applied for the various application like geometric modeling, robotics, networking, etc.
- Appreciate the role of probability and randomization in the analysis of algorithm
- Analyze various algorithms.
- Differentiate polynomial and non-deterministic polynomial algorithms.

T. E. Computer Engineering (Semester-VI)

Course Code	Course Name
CSC601	Software Engineering

Course outcomes:

- Understand and demonstrate basic knowledge in software engineering.
- Identify requirements, analyze and prepare models.
- Plan, schedule and track the progress of the projects.
- Design & develop the software projects.
- Identify risks, manage the change to assure quality in software projects.
- Apply testing principles on software project and understand the maintenance concepts.

Course Code	Course Name
CSC602	System Programming And Compiler Construction

Course outcomes:

- Identify the relevance of different system programs.
- Describe the various data structures and passes of assembler design.
- Identify the need for different features and designing of macros.
- Distinguish different loaders and linkers and their contribution in developing efficient user applications.
- Construct different parsers for given context free grammars.
- Justify the need synthesis phase to produce object code optimized in terms of high execution speed and less memory usage

Course Code	Course Name
CSC603	Data Warehousing and Mining

Course outcomes:

1. Understand Data Warehouse fundamentals, Data Mining Principles
2. Design data warehouse with dimensional modelling and apply OLAP operations.
3. Identify appropriate data mining algorithms to solve real world problems
4. Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining
5. Describe complex data types with respect to spatial and web mining.
6. Benefit the user experiences towards research and innovation.

Course Code	Course Name
CSC604	Cryptography and System Security

Course Outcomes:

- Understand system security goals and concepts, classical encryption techniques and acquire fundamental knowledge on the concepts of modular arithmetic and number theory.
- Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
- Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes.
- Apply different digital signature algorithms to achieve authentication and design secure applications
- Understand network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like SSL, IPSec, and PGP.
- Analyze and apply system security concept to recognize malicious code.

Course Code	Course Name
CSDLO6021	Machine Learning

Course Outcomes:

- Gain knowledge about basic concepts of Machine Learning
- Identify machine learning techniques suitable for a given problem
- Solve the problems using various machine learning techniques
- Apply Dimensionality reduction techniques.
- Design application using machine learning techniques

Course Code	Course Name
CSDLO6022	Advanced Database Management System

Course outcomes:

- Build indexing mechanisms for efficient retrieval of information from databases.
- Measure query cost and optimize query execution
- Design distributed database for better resource management
- Demonstrate the understanding of the concepts of document oriented databases.
- Apply appropriate security techniques database systems.
- Implement advanced data models for real life applications.

Course Code	Course Name
CSDLO6023	Enterprise Resource Planning(ERP)

Course Outcomes:

- To understand the basic structure of ERP.
- To identify implementation strategy used for ERP.
- To apply design principles for various business modules in ERP.
- To apply different emerging technologies for implementation of ERP.
- To analyze security issues in ERP.
- To acquire ERP concepts for real world applications.

Course Code	Course Name
CSDLO6024	Advanced Computer Network

Course Outcomes:

- Demonstrate the understanding of advance data communication technologies.
- Demonstrate the understanding of WAN Technology typically ATM .
- Demonstrate the understanding of packet switching protocols such as X.25, X.75.
- Explore the issues of advance internet routing protocols and also QoS based protocols.
- Analyze issues of traffic requirements and perform capacity planning.
- Demonstrate the understanding of protocol used for management of network.

B. E. Computer Engineering (Semester-VII)

Course Code	Course Name
CSC701	Digital Signal & Image Processing

Course outcomes:

- Apply the concept of DT Signal and DT Systems.
- Classify and analyze discrete time signals and systems
- Implement Digital Signal Transform techniques DFT and FFT.
- Use the enhancement techniques for digital Image Processing
- Differentiate between the advantages and disadvantages of different edge detection techniques
- Develop small projects of 1-D and 2-D Digital Signal Processing.

Course Code	Course Name
CSC702	Mobile Communication & Computing

Course outcomes:

- To identify basic concepts and principles in mobile communication & computing, cellular architecture.
- To describe the components and functioning of mobile networking.
- To classify variety of security techniques in mobile network.
- To apply the concepts of WLAN for local as well as remote applications.
- To describe and apply the concepts of mobility management
- To describe Long Term Evolution (LTE) architecture and its interfaces.

Course Code	Course Name
CSC703	Artificial Intelligence & Soft Computing

Course Outcomes:

- Identify the various characteristics of Artificial Intelligence and Soft Computing techniques.
- Choose an appropriate problem solving method for an agent to find a sequence of actions to reach the goal state.
- Analyse the strength and weakness of AI approaches to knowledge representation, reasoning and planning.
- Construct supervised and unsupervised ANN for real world applications.
- Design fuzzy controller system.
- Apply Hybrid approach for expert system design.

Course Code	Course/Subject Name
CSDLO7032	Big Data Analytics

Course Outcomes:

- Understand the key issues in big data management and its associated applications for business decisions and strategy.
- Develop problem solving and critical thinking skills in fundamental enabling techniques like Hadoop, Mapreduce and NoSQL in big data analytics.
- Collect, manage, store, query and analyze various forms of Big Data.
- Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
- Adapt adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.
- Solve Complex real world problems in various applications like recommender systems, social media applications, health and medical systems, etc.

Course Code	Course Name
ILO 7016	Cyber Security and Laws

Outcomes:

- Understand the concept of cybercrime and its effect on outside world
- Interpret and apply IT law in various legal issues
- Distinguish different aspects of cyber law
- Apply Information Security Standards compliance during software design and development

B. E. Computer Engineering (Semester-VIII)

Course Code	Course Name
CSC801	Human Machine Interaction

Course Outcomes:

- Identify User Interface (UI) design principles.
- Analysis of effective user friendly interfaces.
- Apply Interactive Design process in real world applications.
- Evaluate UI design and justify.
- Create application for social and technical task.

Course Code	Course Name
CSC802	Distributed Computing

Course outcomes:

- Demonstrate knowledge of the basic elements and concepts related to distributed system technologies;
- Illustrate the middleware technologies that support distributed applications such as RPC, RMI and Object based middleware.
- Analyze the various techniques used for clock synchronization and mutual exclusion
- Demonstrate the concepts of Resource and Process management and synchronization algorithms
- Demonstrate the concepts of Consistency and Replication Management
- Apply the knowledge of Distributed File System to analyze various file systems like NFS, AFS and the experience in building large-scale distributed applications.

Course Code	Course Name
DLO8012	Natural Language Processing

Course outcomes:

- Have a broad understanding of the field of natural language processing.
- Have a sense of the capabilities and limitations of current natural language technologies,
- Be able to model linguistic phenomena with formal grammars.
- Be able to Design, implement and test algorithms for NLP problems
- Understand the mathematical and linguistic foundations underlying approaches to the various areas in NLP
- Be able to apply NLP techniques to design real world NLP applications such as machine translation, text categorization, text summarization, information extraction...etc.

Course Code	Course Name
ILO8029	Environmental Management

Course Outcomes:

- Understand the concept of environmental management
- Understand ecosystem and interdependence, food chain etc.
- Understand and interpret environment related legislations