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

CSC301 - Applied Mathematics-III

Learners will be able to:	
CSC301.1	Understand complex variable theory, application of harmonic conjugate to get orthogonal trajectories and analytic function.
CSC301.2	Plot the image of the curve by a complex transformation from z-plane to w-plane.
CSC301.3	Expand the periodic function by using Fourier series and complex form of Fourier series.
CSC301.4	Understand the concept of Laplace transform and inverse Laplace transform of various functions and its application to solve ordinary differential equations.
CSC301.5	Apply the concept of Z- transformation and its inverse of the given sequence.
CSC301.6	Apply the concept of Correlation and Regression to the engineering problems.

CSC302 - Digital Logic Design and Analysis

Learners will be able to:	
CSC302.1	Understand different number systems and code conversion.
CSC302.2	Analyze and minimize different Boolean Algebra theorems and apply them for logic functions.
CSC302.3	Designing and analyzing of combinational circuits.
CSC302.4	Design and analyze synchronous and asynchronous sequential circuits.
CSC302.5	Study and understand TTL and CMOS logic families.
CSC302.6	Understand the basic concepts of VHDL.

CSC303 - Discrete Mathematics

Learners will be able to:	
CSC303.1	Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving and ability to reason logically.
CSC303.2	Ability to understand relations, Diagraph and lattice.
CSC303.3	Ability to understand use of functions, generating functions recurrence relations , graphs and their use in programming applications.

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CSC303.4	Understand use of groups and codes in Encoding-Decoding
CSC303.5	Apply discrete structures into other computing problems such as formal specification, verification, artificial intelligence, cryptography, Data Analysis and Data Mining etc.

CSC304 - ELECTRONIC CIRCUITS AND COMMUNICATION FUNDAMENTALS

Learners will be able to:	
CSC304.1	Understand the use of semiconductor devices in circuits and analyze them.
CSC304.2	Understand importance of oscillators and power amplifiers in communication system
CSC304.3	Understand basic concepts of operational amplifier and their applications.
CSC304.4	Understand the fundamental concepts of electronic communication
CSC304.5	Apply knowledge of electronic devices and circuits to communication applications.
CSC304.6	Study basic concepts of information theory.

CSC305 -   Data Structures

Learners will be able to:	
CSC305.1	Students will be able to implement various linear and nonlinear data structures.
CSC305.2	Students will be able to handle operations like creation, insertion, deletion, searching and traversing on various data structures.
CSC305.3	Students will be able to select appropriate sorting and searching techniques for given problem.
CSC305.4	Students will be able to apply the learned concepts in various domains like DBMS, Compiler Construction and Networking.
CSC305.5	Students will be able to choose appropriate data structure for specified problem domain.

CSL301 -   Digital System Lab

Learners will be able to:	
CSL301.1	Understand the basics of various digital components.

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CSL301.2	Understand the principles of design of combinational logic and sequential logic circuits using basic components.
CSL301.3	Recognize the importance of digital systems in computer architecture.
CSL301.4	Design and simulate the basic digital circuit.

CSL302 - BASIC ELECTRONICS LAB

Learners will be able to:	
CSL302.1	Understand the basics of various semiconductor devices, electronic components and instruments.
CSL302.2	Understand the working of electronic circuits using components
CSL302.3	Recognize the importance of electronic circuits in electronic communications.
CSL302.4	Study the fundamental concepts of various modulation methods.

CSL303 - Data Structures Lab

Learners will be able to:	
CSL303.1	Experiment with operations like searching, insertion, deletion, traversing mechanism etc. on linear and non-linear data structures.
CSL303.2	Apply concepts of data structures in various computing problems.
CSL303.3	Compare and implement different searching, sorting and hashing algorithms.

CSL304: Object Oriented Programming & Methodology (JAVA Lab)

Learners will be able to:	
CSL304.1	To apply fundamental programming constructs.
CSL304.2	To illustrate the concept of packages, classes and objects.
CSL304.3	To elaborate the concept of strings, arrays and vectors.
CSL304.4	To implement the concept of inheritance and interfaces.
CSL304.5	To implement the notion of exception handling and multithreading.
CSL304.6	To develop GUI based application.

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

CSC401 - Applied Mathematics-IV

Learners will be able to:	
CSC401.1	Students in this course will be able to apply the method of solving complex integration, computing residues & evaluate various contour integrals.
CSC401.2	Demonstrate ability to manipulate matrices and compute Eigen values and Eigen vectors.
CSC401.3	Apply the concept of probability distribution to the engineering problems.
CSC401.4	Apply the concept of sampling theory to the engineering problems.
CSC401.5	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.
CSC401.6	Apply the concept of Linear & Non-Linear Programming Problem to the engineering problems.

CSC402 - Analysis of Algorithms

Learners will be able to:	
CSC402.1	Analyze the running time and space complexity of algorithms.
CSC402.2	Describe, apply and analyze the complexity of divide and conquer strategy.
CSC402.3	Describe, apply and analyze the complexity of greedy strategy.
CSC402.4	Describe, apply and analyze the complexity of dynamic programming strategy.
CSC402.5	Explain and apply backtracking, branch and bound and string matching techniques to deal with some hard problems.
CSC402.6	Describe the classes P, NP, and NP-Complete and be able to prove that a certain problem is NP-Complete.

CSC403 - Computer Organization and Architecture

Learners will be able to:	
CSC403.1	To describe basic structure of the computer system.
CSC403.2	To demonstrate the arithmetic algorithms for solving ALU operations.
CSC403.3	To describe instruction level parallelism and hazards in typical processor pipelines.

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CSC403.4	To describe superscalar architectures, multi-core architecture and their advantages
CSC403.5	To demonstrate the memory mapping techniques.
CSC403.6	To Identify various types of buses, interrupts and I/O operations in a computer system

CSC404 -   Computer Graphics

Learners will be able to:	
CSC404.1	Understand the basic concepts of Computer Graphics
CSC404.2	Demonstrate various algorithms for scan conversion and filling of basic objects and their comparative analysis
CSC404.3	Apply geometric transformations, viewing and clipping on graphical objects
CSC404.4	Explore solid model representation techniques and projections
CSC404.5	Understand visible surface detection techniques and illumination models

CSC405 -   Operating System

Learners will be able to:	
CSC405.1	Understand role of Operating System in terms of process, memory, file and I/O management.
CSC405.2	Apply and analyse the concept of a process, thread, mutual exclusion and deadlock..
CSC405.3	Evaluate performance of process scheduling algorithms and IPC
CSC405.4	Apply and analyse the concepts of memory management techniques
CSC405.5	Evaluate the performance of memory allocation and replacement techniques.
CSC405.6	Apply and analyze different techniques of file and I/O management.

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CSL401: Analysis of Algorithm Laboratory

Learners will be able to:	
CSL401.1	Analyze the complexities of various problems in different domains.
CSL401.2	Prove the correctness and analyze the running time of the basic algorithms for those classic problems in various domains.
CSL401.3	Develop the efficient algorithms for the new problem with suitable designing techniques.
CSL401.4	Implement the algorithms using different strategies.

CSL402 - Computer Graphics Lab

Learners will be able to:	
CSL402.1	Implement various output and filled area primitive algorithms using C
CSL402.2	Apply transformation and clipping algorithms on graphical objects
CSL402.3	Implementation of curve and fractal generation

CSL403 - Processor Architecture Lab

Learners will be able to:	
CSL403.1	Assemble personal computer.
CSL403.2	Design the basic building blocks of a computer: arithmetic-logic unit, registers,central processing unit, and memory.
CSL403.3	Implement various algorithms like Booth's algorithm for arithmetic operations.
CSL403.4	Describe various I/O buses with merits and demerits.

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CSL404 - OPERATING SYSTEM LAB

Learners will be able to:	
CSL404.1	Understand basic operating system commands.
CSL404.2	Understand and explore various system calls.
CSL404.3	Write shell scripts and shell commands using kernel APIs.
CSL404.4	Implement and analyze different process scheduling algorithms.
CSL404.5	Implement and analyze different memory management algorithms.
CSL404.6	Evaluate process management techniques and deadlock handling using simulator.

CSL405 - Open Source Technology Lab

Learners will be able to:	
CSL405.1	To apply fundamental concepts of python and Perl.
CSL405.2	To implement the Object Oriented concepts of Python.
CSL405.3	To develop program for data structures in python.
CSL405.4	To implement the concept of file and database handling using python and perl.
CSL405.5	To explore GUI and Django web Framework for developing python based Application

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TE-Sem V (R2016): Course Outcomes

CSC501 -   Microprocessor

Learners will be able to:	
CSC501.1	Describe architecture of x86 processors.
CSC501.2	Interpret the instructions of 8086 and write assembly and Mixed language programs.
CSC501.3	Explain the concept of interrupts.
CSC501.4	Identify the specifications of peripheral chip
CSC501.5	Design 8086 based system using memory and peripheral chips
CSC501.6	Appraise the architecture of advanced processors

CSC502 -   Database Management System

Learners will be able to:	
CSC502.1	Understand the fundamentals of a database system.
CSC502.2	Design and draw ER and EER diagram for the real life problem.
CSC502.3	Convert conceptual model to relational model and formulate relational algebra queries
CSC502.4	Design and querying database using SQL
CSC502.5	Analyse and apply concepts of normalization to relational database design.
CSC502.6	Understand the concept of transaction, concurrency and recovery.

CSC503 -   COMPUTER NETWORK

Learners will be able to:	
CSC503.1	Demonstrate the concepts of data communication at physical layer and compare ISO - OSI model with TCP/IP model.
CSC503.2	Demonstrate the knowledge of networking protocols at data link layer.
CSC503.3	Design the network using IP addressing and subnetting / supernetting schemes..
CSC503.4	Analyze various routing algorithms and protocols at network layer.

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CSC503.5	Apply discrete structures into other computing problems such as formal specification, verification, artificial intelligence, cryptography, Data Analysis and Data Mining etc.
CSC503.6	Explore protocols at application layer.

CSC504 - Theory of Computer Science

Learners will be able to:	
CSC504.1	Identify the central concepts in theory of computation revolving around NFAand DFA.
CSC504.2	Infer the equivalence of languages described by finite automata and regular expressions.
CSC504.3	Devise regular, context free grammars while recognizing the strings and tokens.
CSC504.4	Design pushdown automata to recognize the language.
CSC504.5	Develop an understanding of computation through Turing machine.
CSC504.6	Acquire fundamental understanding of decidability and undecidability.

CSDLO5012- Advanced Operating Systems

Learners will be able to:	
CSDLO5012.1	Demonstrate understanding of design issues of Advanced operating systems and compare different types of operating systems.
CSDLO5012.2	Analyse design aspects and data structures used for file subsystem, memory subsystem and process subsystem of Unix OS.
CSDLO5012.3	Demonstrate understanding of different architectures used in Multiprocessor OS and analyse the design and data structures used in Multiprocessor operating systems.
CSDLO5012.4	Differentiate between threads and processes and compare different processor scheduling algorithms used in Multiprocessor OS
CSDLO5012.5	Classify Real Time OS and analyse various real time scheduling algorithms.
CSDLO5012.6	Explore architectures and design issues of Mobile OS,Virtual OS, Cloud OS.

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CSDLO5013 - Advanced Algorithm

Learners will be able to:	
CSDLO5013.1	Describe analysis techniques for algorithms.
CSDLO5013.2	Identify appropriate data structure and design techniques for different problems.
CSDLO5013.3	Identify appropriate algorithm to be applied for the various application like geometric modelling, robotics, networking, etc.
CSDLO5013.4	Appreciate the role of probability and randomization in the analysis of algorithm.
CSDLO5013.5	Analyse various algorithms.
CSDLO5013.6	Differentiate polynomial and non-deterministic polynomial algorithms.

CSL501 - Microprocessor lab

Learners will be able to:	
CSL501.1	Use appropriate instructions to program microprocessor to perform various task
CSL501.2	Develop the program in assembly/ mixed language for Intel 8086 processor.
CSL501.3	Demonstrate the execution and debugging of assembly/ mixed language program.
CSL501.4	Interface 8086 processor with i/o or memory.

CSL502 - Computer Network Laboratory

Learners will be able to:	
CSL502.1	Select the basic components of a Network system and Explain different Computer Networks
CSL502.2	Explain and Apply pieces of hardware and software to make networks more efficient faster, more secure, easier to use, able to transmit several simultaneous messages and Able to interconnect with other networks by choosing appropriate medias.
CSL502.3	Differentiate the various types of network configurations and apply them using NS2 to meet the changing and challenging networking needs of organizations.
CSL502.4	Understand and Interpret different protocols, networking tools and network architectures.
CSL502.5	Examine various concepts of local area networks to solve different network faults..

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CSL503- Database & Information System Lab

Learners will be able to:	
CSL503.1	Design and draw ER and EER diagram for the real life problem with software tool.
CSL503.2	Create and update database and tables with different DDL and DML statements.
CSL503.3	Apply /Add integrity constraints and able to provide security to data.
CSL503.4	Implement and execute Complex queries.
CSL503.5	Apply triggers and procedures for specific module/task
CSL503.6	Handle concurrent transactions and able to access data through front end (using JDBC ODBC connectivity.)

CSL504 - Web Design Lab

Learners will be able to:	
CSL504.1	Understand core concepts and features of web technology.
CSL504.2	Design static web pages using HTML5 and CSS3.
CSL504.3	Apply the concept of client side validation and design dynamic webpages using JavaScript and JQuery.
CSL504.4	Evaluate client and server side technologies and create interactive web pages using PHP, AJAX with MySQL..
CSL504.5	Understand the basics of XML, DTD and XSL and develop web page using it.
CSL504.6	Analyse end user requirements and create web application using appropriate web technologies and framework.

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CSL505: Business Communication & Ethics

Learners will be able to:	
CSL505.1	Design a technical document using precise language, suitable vocabulary and apt style..
CSL505.2	Develop the life skills/interpersonal skills to progress professionally by building stronger relationships.
CSL505.3	Demonstrate awareness of contemporary issues knowledge of professional and ethical responsibilities.
CSL505.4	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.
CSL505.5	Deliver formal presentations effectively implementing the verbal and non-verbal skills

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TE. Sem VI (R2016): Course Outcomes

CSC601 -   Software Engineering

Learners will be able to:	
CSC601.1	Demonstrate knowledge of software engineering principles and paradigms to analyse real world problem.
CSC601.2	Estimate effort, duration and productivity and create timeline schedule for any given real time requirements.
CSC601.3	Interpret the characteristics of effective modular design and apply design standards to make efficient user interface design.
CSC601.4	Test and validate any software using testing metrics.
CSC601.5	Identify risks and perform risk analysis
CSC601.6	Understand the importance of SCM by understanding version and change control

CSC602 - System Programming and Compiler Construction

Learners will be able to:	
CSC602.1	Understand system security goals and concepts, classical encryption techniques and acquire fundamental knowledge on the concepts of modular arithmetic and number theory.
CSC602.2	Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
CSC602.3	Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes.
CSC602.4	Apply different digital signature algorithms to achieve authentication and design secure applications
CSC602.5	Understand network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like SSL, IPSec, and PGP.
CSC602.6	Analyze and apply system security concept to recognize malicious code.

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CSC603- Data warehousing and Mining

Learners will be able to:	
CSC603.1	Understand Data Warehouse fundamentals, Data Mining Principles
CSC603.2	Design data warehouse with dimensional modelling and apply OLAP operations.
CSC603.3	Identify appropriate data mining algorithms to solve real world problems.
CSC603.4	Compare and evaluate different data mining techniques like classification,prediction, clustering and association rule mining
CSC603.5	Describe complex data types with respect to spatial and web mining
CSC603.6	Benefit the user experiences towards research and innovation

CSC604 - CRYPTOGRAPHY AND SYSTEM SECURITY

Learners will be able to:	
CSC604.1	Understand system security goals and concepts, classical encryption techniques and acquire fundamental knowledge on the concepts of modular arithmetic and number theory.
CSC604.2	Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication.
CSC604.3	Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes..
CSC604.4	Apply different digital signature algorithms to achieve authentication and design secure applications
CSC604.5	Understand network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like SSL, IPSec, and PGP.
CSC604.6	Analyze and apply system security concept to recognize malicious code.

CSDLO6021: Machine Learning

Learners will be able to:	
CSDLO6021:.1	Gain knowledge about basic concepts of Machine Learning
CSDLO6021.2	Identify machine learning techniques suitable for a given problem

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CSDLO6021.3	Solve the problems using various machine learning techniques
CSDLO6021.4	Apply Dimensionality reduction techniques.
CSDLO6021.5	Design application using machine learning techniques

CSDLO6023: Enterprise Resource Planning(ERP)

Learners will be able to:	
CSDLO6023:.1	To understand the basic structure of ERP
CSDLO6023.2	To identify implementation strategy used for ERP
CSDLO6023.3	To apply design principles for various business modules in ERP
CSDLO6023.4	To apply different emerging technologies for implementation of ERP.
CSDLO6023.5	To analyse security issues in ERP
CSDLO6023.6	To acquire ERP concepts for real world applications

CSL601- Software Engineering Laboratory

Learners will be able to:	
CSL601.1.	Identify requirements and apply process model to selected case study
CSL601.2	Analyze and design models for the selected case study using UML modeling.
CSL601.3	Use various software engineering tools.

CSL602: System Software Lab

Learners will be able to:	
CSL602:1	Generate machine code by using various databases generated in pass one of two pass assembler.
CSL602.2	Construct different databases of single pass macro processor.
CSL602.3	Identify and validate different tokens for given high level language code.
CSL602.4	Parse the given input string by constructing Top down /Bottom up parser..
CSL602.5	Implement synthesis phase of compiler with code optimization techniques
CSL602.6	Explore various tools like LEX and YACC.

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CSL603- Data warehousing and Mining Lab

Learners will be able to:	
CSL603.1.	Design data warehouse and perform various OLAP operations
CSL603.2	Implement classification, prediction, clustering and association rule mining algorithms.
CSL603.3	Demonstrate classifications, prediction, clustering and association rule mining
CSL603.4	Implement spatial and web mining algorithms

CSL604 - SYSTEM SECURITY LAB

Learners will be able to:	
CSL604:1	To be able to apply the knowledge of symmetric cryptography to implement simple ciphers.
CSL604.2	To be able to analyze and implement public key algorithms like RSA and El Gamal.
CSL604.3	To analyze and evaluate performance of hashing algorithms.
CSL604.4	To explore the different network reconnaissance tools to gather information about networks.
CSL604.5	To explore and use tools like sniffers, port scanners and other related tools for analysing packets in a network.
CSL604.6	To be able to set up firewalls and intrusion detection systems using open source technologies and to explore email security.
CSL604.7	To be able to explore various attacks like buffer-overflow, and web-application attacks.

CSM605: Mini Project

Learners will be able to:	
CSM605.1	Acquire practical knowledge within the chosen area of technology for project development.
CSM605.2	Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach.
CSM605.3	Contribute as an individual or in a team in development of technical projects
CSM605.4.	Develop effective communication skills for presentation of project related activities

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BE-Sem VII (2012): Course Outcomes

CPC701 -   Digital Signal Processing

Learners will be able to:	
CPC701.1	Demonstrate discrete time signal manipulation
CPC701.2	Analyse DT system in time domain
CPC701.3	Convert a signal from time domain to frequency domain using Fourier transform
CPC701.4	Develop FFT flow-graph and Fast DSP Algorithms
CPC701.5	Design DSP system for Real Time Signal Processing

CPC702 -   Cryptography and System Security

Learners will be able to:	
CPC702.1	Discuss the principles and practices of cryptographic techniques.
CPC702.2	Categorise a variety of generic security threats and Demonstrate the solution to secure the system from these threats.
CPC702.3	Design and Implement appropriate security techniques to provide confidentiality.
CPC702.4	Examine different internet security protocols for network communication models.
CPC702.5	Demonstrate secure techniques to achieve authenticity and integrity.

CPC703 -   Artificial Intelligence

Learners will be able to:	
CPC703.1	Develop a basic understanding of design of an Intelligent Agent.
CPC703.2	Understand different problem solving techniques, search strategies and to apply them to solve AI Problems.
CPC703.3	Understand and represent the problems in AI using appropriate knowledge representation technique.
CPC703.4	Analyse and deal with uncertainty and incomplete information by designing logical models for reasoning under uncertainty.
CPC703.5	Ability to design applications in Various domains of AI for real world scenarios.

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CPE7025 - Soft Computing

Learners will be able to:	
CPE7025.1	Review the various constituents of soft computing and their applications
CPE7025.2	Apply fuzzy logic and reasoning to handle uncertainty and design fuzzy inference systems for real life problems.
CPE7025.3	Differentiate types of learning, and use different training algorithms in Artificial Neural Networks (NN).
CPE7025.4	Explain the architecture of Neuro-fuzzy inference systems and review different hybrid systems.
CPE7025.5	Use Genetic Algorithm to provide optimum solution and be familiarized with the mathematical background of different optimization techniques.

CPE7026 - Enterprise Resource Planning and Supply Chain Management (ERP & SCM)

Learners will be able to:	
CPE7026.1	Comprehensive knowledge of basic structure of ERP and SCM
CPE7026.2	Capability to articulate and justify strategies used for ERP and SCM
CPE7026.3	Demonstrative knowledge of design principles for various business modules in ERP and SCM.
CPE7026.4	Ability to adapt to a new era of emerging technologies for implementation of ERP and SCM
CPE7026.5	Ability to synthesize the use of ERP over old business models

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BE-Sem VIII (2012): Course Outcomes

CPC801 - Data Warehousing and Mining

Learners will be able to:	
CPC801.1	Understand basics of data warehouse and analyse the impact of dimensional modeling on the same
CPC801.2	Apply OLAP operations on data warehouse and study ETL process
CPC801.3	Understand the fundamentals of mining tasks and techniques and perform data pre-processing.
CPC801.4	Understand and apply various algorithms for predicting and forecasting
CPC801.5	Understand and apply various algorithms for discovering hidden patterns or relationships.

CPC802 - Human Machine Interaction

Learners will be able to:	
CPC802.1	To design user centric interfaces.
CPC802.2	To design innovative and user friendly interfaces.
CPC802.3	To apply HMI in their day-to-day activities.
CPC802.4	To criticise existing interface designs, and improve them.
CPC802.5	To Design application for social and technical task.

CPC803 - Parallel and Distributed Systems

Learners will be able to:	
CPC803.1	Apply the basic principles to understand & analyse the design of parallel and distributed system.
CPC803.2	Formulate the ways to parallelize systems to solve complex problems.
CPC803.3	Interpret the challenges and opportunities faced by parallel and distributed systems.
CPC803.4	Demonstrate the middleware technologies that support distributed applications such as RPC, RMI and object based middleware.
CPC803.5	Justify the performance and reliability of distributed and parallel programs

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CPE8031 - Machine Learning

Learners will be able to:	
CPE8031.1	Ability to analyse the applications which can use Machine Learning Techniques.
CPE8031.2	Ability to develop systems based on regression, classification or clustering methods.
CPE8031.3	Ability to evaluate and design supervised and unsupervised learning methods.
CPE8031.4	Ability to compare Dimensionality reduction techniques.
CPE8031.5	Students would understand Reinforcement learning.

CPE8035 - Big Data Analytics

Learners will be able to:	
CPE8035.1	Understand the key issues in big data management and its associated applications in intelligent business and scientific computing.
CPE8035.2	Build solutions using big data technologies such as MapReduce,and the ability to write scalable / parallel / distributed algorithms
CPE8035.3	Build business model for database and warehousing to handle bigdata using NoSQL
CPE8035.4	Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
CPE8035.5	Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.