

CMPN department		
Second Year(SE) SEM 3 Academic Year:2019-2020 (Revised course 2016)		
Course Code	Course Name	Course Outcomes
CSC301	Applied Mathematics - III	CSC301.1 Understand the basic knowledge of Laplace Transform CSC301.2 understand the concept of inverse laplace transform of various functions and its applications in solving differential equations CSC301.3 Understand the periodic function by Fourier series and complex form of fourier series and Fourier Transforms. CSC301.4 understand the concept of vector algebra and vector differentiation CSC301.5 understand the concept of vector integral in Green's theorem,Stoke's theorem. CSC301.6 Understand complex variables theory, applications of harmonic conjugate to get orthogonal
CSC302	Digital Logic Design and Analysis	CSC304.1. To study and compare different number systems and their conversions. CSC304.2. To analyze and minimize Boolean expressions. CSC304.3. To design and implement combinational circuits and sequential circuits CSC304.4. To understand the basic concepts of VHDL,TTL and CMOS Logic families. CSC305.2: Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving
CSC303	Discrete Mathematics	CSC303.2. Ability to reason logically. CSC303.3. Ability to understand relations, Digraph and lattice. CSC303.4. Ability to understand use of functions, graphs and their use in programming applications. CSC303. 5. Understand use of groups and codes in Encoding-Decoding verification, artificial intelligence, cryptography, Data Analysis and Data Mining etc.
CSC304	Electronic Circuits and Communication Fundamentals	CSC304.1. To develop the knowledge of semiconductor devices and circuits, and explain their use in communication applications. CSC304.2. To inculcate circuit analysis capabilities in students. CSC304.3. To gain knowledge in electronic devices and circuits that is useful in real life applications. CSC304.4. To understand the fundamental concepts of electronic communication and their use in computer applications.
CSC305	Data Structures	CSC305.1. To teach various storage mechanisms of data. CSC305.2. To design and implement various data structures. CSC305.3. To introduce various techniques for representation of the data in the real world. CSC305.4. To teach different sorting techniques. CSC305.5. To teach different searching techniques.
CSL304	OOPM(Java) Lab	CSL304.1. To learn the object oriented programming concepts. CSC305.2: to study various java programming concepts like multithreading, exception handling, serialization
CSL301	Digital System Lab	CSL304.3. To explain components of GUI based programming. 1. Understand the basics of various digital components. 2. Understand the principles of design of combinational logic and sequential logic circuits using basic components. 3. Recognize the importance of digital systems in computer architecture. 4. Design and simulate the basic digital circuit.
CSL302	Basic Electronics Lab	1. Understand the basics of various semiconductor devices, electronic components and instruments. 2. Understand the working of electronic circuits using components 3. Recognize the importance of electronic circuits in electronic communications. 4. Study the fundamental concepts of various modulation methods.
CSL303	Data Structures Lab	1. Students will be able to implement various linear and nonlinear data structures. 2. Students will be able to handle operations like insertion, deletion, searching and traversing on various data structures.
Second Year(SE) SEM 4 Academic Year:2019-2020 (Revised course 2016)		
Course Code	Course Name	Course Outcomes
CSC401	Applied Mathematics IV	1. Students in this course will be able to apply the method of solving complex integration, computing residues & evaluate various contour integrals. 2. Demonstrate ability to manipulate matrices and compute Eigen values and Eigen vectors. 3. Apply the concept of probability distribution to the engineering problems. 4. Apply the concept of sampling theory to the engineering problems. 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. 6. Apply the concept of Linear & Non-Linear Programming Problem to the engineering problems
CSC402	Analysis of Algorithms	1. Analyze the running time and space complexity of algorithms. 2. Describe, apply and analyze the complexity of divide and conquer strategy. 3. Describe, apply and analyze the complexity of greedy strategy. 4. Describe, apply and analyze the complexity of dynamic programming strategy. 5. Explain and apply backtracking, branch and bound and string matching techniques to deal with some hard problems. 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	2. To demonstrate the arithmetic algorithms for solving ALU operations. 3. To describe instruction level parallelism and hazards in typical processor pipelines. 4. To describe superscalar architectures, multi-core architecture and their advantages 5. To demonstrate the memory mapping techniques. 6. To identify various types of buses, interrupts and I/O operations in a computer system
CSC404	Computer Graphics	1 Understand the basic concepts of Computer Graphics. 2 Demonstrate various algorithms for scan conversion and filling of basic objects and their comparative analysis. 3 Apply geometric transformations, viewing and clipping on graphical objects. 4 Explore solid model representation techniques and projections. 5 Understand visible surface detection techniques and illumination models
CSC405	Operating System	1. Understand role of Operating System in terms of process, memory, file and I/O management. 2. Apply and analyse the concept of a process, thread, mutual exclusion and deadlock. 3. Evaluate performance of process scheduling algorithms and IPC. 4. Apply and analyse the concepts of memory management techniques. 5. Evaluate the performance of memory allocation and replacement techniques. 6. Apply and analyze different techniques of file and I/O management.
CSL401	Analysis of Algorithms Lab	1. Analyze the complexities of various problems in different domains. 2. Prove the correctness and analyze the running time of the basic algorithms for those classic problems in various domains. 3. Develop the efficient algorithms for the new problem with suitable designing techniques. 4. Implement the algorithms using different strategies.
CSL402	Computer Graphics Lab	1 Explore the working principle, utility of various input/ output devices and graphical tools. 2 Implement various output and filled area primitive algorithms using C/ OpenGL 3 Apply transformation and clipping algorithms on graphical objects. 4 Implementation of curve and fractal generation. 5 Develop a Graphical application based on learned concept.

CSL403	Processor Architecture Lab	<ol style="list-style-type: none"> 1. Assemble personal computer 2. Design the basic building blocks of a computer: arithmetic-logic unit, registers, central processing unit, and memory. 3. Implement various algorithms like Booth's algorithm for arithmetic operations 4. Describe various I/O buses with merits and demerits.
CSL404	Operating System Lab	<ol style="list-style-type: none"> 1. Understand basic operating system commands. 2. Understand and explore various system calls. 3. Write shell scripts and shell commands using kernel APIs. 4. Implement and analyze different process scheduling algorithms 5. Implement and analyze different memory management algorithms. 6. Evaluate process management techniques and deadlock handling using simulator.
CSL405	Open Source Technology Lab	<ol style="list-style-type: none"> 1. To understand basic concepts in python and perl. 2. To explore contents of files, directories and text processing with python 3. To develop program for data structure using built in functions in python. 4. To explore django web framework for developing python based web application. 5. To understand file handling and database handling using perl. 6. To explore basics of two way communication between client and server using python and perl

Third Year(TE) SEM 5 Academic Year:2019-2020 (Revised course 2016) ODD

Course Code	Course Name	Course Outcomes
CSC501	Microprocessor	<ol style="list-style-type: none"> 1. Describe architecture of 8086 processors. 2. Interpret the instructions of 8086 and write assembly and Mixed language programs. 3. Explain the concept of Interrupts 4. Identify the specifications of peripheral chip
CSC502	Database Management System	<ol style="list-style-type: none"> 1. Understand the fundamentals of database systems 2. Design and draw ER and EER diagram for the real life problem. 3. Convert conceptual model to relational model and formulate relational algebra queries. 4. Design and querying database using SQL. 5. Analyze and apply concepts of normalization to relational database design.
CSC503	Computer Network	<ol style="list-style-type: none"> 1. Demonstrate the concepts of data communication at physical layer and compare ISO - OSI model with TCP/IP model. 2. Demonstrate the knowledge of networking protocols at data link layer. 3. Design the network using IP addressing and subnetting / supernetting schemes. 4. Analyze various routing algorithms and protocols at network layer. 5. Analyze transport layer protocols and congestion control algorithms. 6. Explore protocols at application layer .
CSC504	Theory of Computer Science	<ol style="list-style-type: none"> 1. Identify the central concepts in theory of computation and differentiate between deterministic and nondeterministic automata, also obtain equivalence of NFA and DFA. 2. Infer the equivalence of languages described by finite automata and regular expressions. 3. Devise regular, context free grammars while recognizing the strings and tokens. 4. Design pushdown automata to recognize the language. 5. Develop an understanding of computation through Turing Machine. 6. Acquire fundamental understanding of decidability and undecidability.
CSDL05011	Multimedia System	<ol style="list-style-type: none"> 2. To understand different multimedia components. 3. To explain file formats for different multimedia components. 4. To analyze the different compression algorithms. 5. To describe various multimedia communication techniques.
CSL501	Microprocessor Lab	<ol style="list-style-type: none"> 1. Use appropriate instructions to program microprocessor to perform various task 2. Develop the program in assembly/ mixed language for Intel 8086 processor 3. Demonstrate the execution and debugging of assembly/ mixed language program
CSL502	Computer Network Lab	<ol style="list-style-type: none"> 1. Design and setup networking environment in Linux. 2. Use Network tools and simulators such as NS2, Wireshark etc. to explore networking algorithms and protocols. 3. Implement programs using core programming APIs for understanding networking concepts
CSL503	Database & Information System Lab	<ol style="list-style-type: none"> 2. Create and update database and tables with different DDL and DML statements. 3. Apply /Add integrity constraints and able to provide security to data. 4. Implement and execute Complex queries. 5. Apply triggers and procedures for specific module/task 6. Handle concurrent transactions and able to access data through front end (using JDBC ODBC connectivity.)
CSL504	Web Design Lab	<ol style="list-style-type: none"> 2. Design static web pages using HTML5 and CSS3 3. Apply the concept of client side validation and design dynamic web pages using JavaScript and JQuery. 4. Evaluate client and server side technologies and create Interactive web pages using PHP , AJAX with database connectivity using MySQL 5. Understand the basics of XML, DTD and XSL and develop web pages using XML / XSLT.
CSL505	Business Communication & Ethics	<ol style="list-style-type: none"> 2. Develop the life skills/interpersonal skills to progress professionally by building stronger relationships. 3. Demonstrate awareness of contemporary issues knowledge of professional and ethical responsibilities. 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. 5. Deliver formal presentations effectively implementing the verbal and non-verbal skills

Third Year(TE) SEM 6 Academic Year:2019-2020 (Revised course 2016) EVEN

Course Code	Course Name	Course Outcomes
CSC601	Software Engineering	<ol style="list-style-type: none"> 1. Understand and demonstrate basic knowledge in software engineering. 2. Identify requirements, analyze and prepare models. 3. Plan, schedule and track the progress of the projects. 4. Design & develop the software projects. 5. Identify risks, manage the change to assure quality in software projects. 6. Apply testing principles on software project and understand the maintenance concepts.
CSC602	System Programming And Compiler Construction	<ol style="list-style-type: none"> 1. Identify the relevance of different system programs. 2. Describe the various data structures and passes of assembler design. 3. Identify the need for different features and designing of macros. 4. Distinguish different loaders and linkers and their contribution in developing efficient user applications. 5. Construct different parsers for given context free grammars. 6. Justify the need synthesis phase to produce object code optimized in terms of high execution speed.
CSC603	Data Warehousing and Mining	<ol style="list-style-type: none"> 1. Design data warehouse with dimensional modelling and apply OLAP operations. 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.
CSC604	Cryptography and System Security	<ol style="list-style-type: none"> 1. Understand system security goals and concepts, discuss various cryptosystems and acquire fundamental knowledge on the concepts of modular arithmetic and number theory. 2. Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication 3. Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes. 4. Apply different digital signature algorithms to achieve authentication and design secure applications 5. Understand network security basics, analyze different attacks on networks and evaluate the
CSDLO 6022	Advanced Database Management System	<ol style="list-style-type: none"> 1. Build indexing mechanisms for efficient retrieval of information from databases. 2. Measure query cost and optimize query execution 3. Design distributed database for better resource management 4. Demonstrate the understanding of the concepts of document oriented databases. 5. Apply appropriate security techniques database systems. 6. Implement advanced data models for real life applications.
CSL601	Software Engineering Lab	<ol style="list-style-type: none"> 1. Identify requirements and apply process model to selected case study. 2. Analyze and design models for the selected case study using UML modeling. 3. Use various software engineering tools.
CSL602	System Software Lab	<ol style="list-style-type: none"> 1. Generate machine code by using various databases generated in pass one of two pass assembler. 2. Construct different databases of single pass macro processor. 3. Identify and validate different tokens for given high level language code. 4. Parse the given input string by constructing Top down /Bottom up parser. 5. Implement synthesis phase of compiler with code optimization techniques. 6. Explore various tools like LEX and YACC.
CSL603	Data Warehousing and Mining Lab	<ol style="list-style-type: none"> 1. Design data warehouse and perform various OLAP operations. 2. Implement classification, prediction, clustering and association rule mining algorithms. 3. Demonstrate classifications, prediction, clustering and association rule mining algorithms on a given set of data sample using data mining tools. 4. Implement spatial and web mining algorithms.
CSL604	System Security Lab	<ol style="list-style-type: none"> 1. To be able to apply the knowledge of symmetric cryptography to implement simple ciphers. 2. To be able to analyze and implement public key algorithms like RSA and El Gamal. 3. To analyze and evaluate performance of hashing algorithms. 4. To explore the different network reconnaissance tools to gather information about networks. 5. To explore and use tools like sniffers, port scanners and other related tools for analysing packets in a network
C5M605	Mini project	<ol style="list-style-type: none"> 1. Identify,analyze,formulate and handle programming projects with a comprehensive and systematic approach 2. Identify,analyze,formulate and handle programming projects with a comprehensive and systematic approach 3. Contribute as an individual or in a team in development of technical projects. 4. Develop effective communication skills for presentation of project related activities.

Final Year(BE) SEM 7 Academic Year:2019-2020(Revised course 2016) ODDSemester

Course Code	Course Name	Course Outcomes
CSC701	Digital Signal & Image Processing	<ol style="list-style-type: none"> 1. Apply the concept of DT Signal and DT Systems. 2. Classify and analyze discrete time signals and systems 3. Implement Digital Signal Transform techniques DFT and FFT. 4. Use the enhancement techniques for digital Image Processing 5. Differentiate between the advantages and disadvantages of different edge detection techniques 6. Develop small projects of 1-D and 2-D Digital Signal Processing
CSC702	Mobile Communication & Computing	<ol style="list-style-type: none"> 1. To identify basic concepts and principles in mobile communication & computing, cellular architecture. 2. To describe the components and functioning of mobile networking. 3. To classify variety of security techniques in mobile network. 4. To apply the concepts of WLAN for local as well as remote applications. 5. To describe and apply the concepts of mobility management 6. To describe Long Term Evolution (LTE) architecture and its interfaces.
CSC703	Artificial Intelligence & Soft Computing	<ol style="list-style-type: none"> 1. Identify the various characteristics of Artificial intelligence and soft computing techniques. 2. Choose an appropriate problem solving method for an agent to find a sequence of actions to reach the goal state. 3. Analyse the strength and weakness of AI approaches to knowledge representation, reasoning and planning. 4. Construct supervised and unsupervised ANN for real world applications.
CSDLO 7032	Big Data Analytics	<ol style="list-style-type: none"> 1. Develop problem solving and critical thinking skills in fundamental enabling techniques like Hadoop, Mapreduce and NoSQL in big data analytics. 2. Collect, manage, store, query and analyze various forms of Big Data. 3. Interpret business models and scientific computing paradigms, and apply software tools for big data analytics. 4. Adapt adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc. 5. Solve Complex real world problems in various applications like recommender systems, social

ILO 7013	Management Information System	<p>1. Explain how information systems transform business</p> <p>2. Identify the impact information systems have on an organization</p> <p>3. Describe IT infrastructure and its components and its current trends</p> <p>4. Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making</p> <p>5. Identify the types of systems used for enterprise-wide knowledge management and how they</p>
CSL701	Digital Signal and Image Processing Lab	<p>1. Sample and reconstruct the signal.</p> <p>2. Implement and apply operations like Convolution, Correlation, DFT and FFT on DT signals</p> <p>3. Implement spatial domain image enhancement techniques.</p> <p>4. Implement Edge detection techniques using first order derivative filters.</p>
CSL702	Mobile Application Development Lab	<p>1. To develop and demonstrate mobile applications using various tools</p> <p>2. Students will articulate the knowledge of GSM, CDMA & Bluetooth technologies and demonstrate it.</p> <p>3. Students will able to carry out simulation of frequency reuse , hidden terminal problem</p> <p>4. To develop security algorithms for mobile communication network</p> <p>5. To demonstrate simulation and compare the performance of Wireless LAN</p> <p>6. To implement and demonstrate mobile node discovery and route maintains</p>
CSL703	Artificial Intelligence & Soft Computing Lab	<p>1 To realize the basic techniques to build intelligent systems</p> <p>2 To create knowledge base and apply appropriate search techniques used in problem solving.</p> <p>3 Apply the supervised/unsupervised learning algorithm.</p> <p>4 Design fuzzy controller system</p>
CSL704	Computational Lab-I	<p>1. Acquire practical knowledge within the chosen area of technology for project development.</p> <p>2. Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach.</p>
CSL705	Major Project- I	<p>The Project work enables students to develop further skills and knowledge gained during the programme by applying them to the analysis of a specific problem or issue, via a substantial piece of work carried out over an extended period. For students to demonstrate proficiency in the design of a research project, application of appropriate research methods, collection and analysis of data and</p>
Final Year(BE) SEM 8 Academic Year:2019-2020 (Revised course 2016) EVEN Semester		

Course Code	Course Name	Course Outcomes
CSC801	Human Machine Interaction	<ol style="list-style-type: none"> 1. Identify User Interface (UI) design principles. 2. Analysis of effective user friendly interfaces. 3. Apply Interactive Design process in real world applications. 4. Evaluate UI design and justify. 5. Create application for social and technical task.
CSC802	Distributed Computing	<ol style="list-style-type: none"> 1. Demonstrate knowledge of the basic elements and concepts related to distributed system technologies; 2. Illustrate the middleware technologies that support distributed applications such as RPC, RMI and Object based middleware. 3. Analyze the various techniques used for clock synchronization and mutual exclusion 4. Demonstrate the concepts of Resource and Process management and synchronization algorithms 5. Demonstrate the concepts of Consistency and Replication Management 6. Apply the knowledge of Distributed File System to analyze various file systems like NFS, AFS and the experience in building large-scale distributed applications
DLO8012	Natural Language Processing	<ol style="list-style-type: none"> 1. Have a broad understanding of the field of natural language processing. 2. Have a sense of the capabilities and limitations of current natural language technologies, 3. Be able to model linguistic phenomena with formal grammars. 4. Be able to Design, implement and test algorithms for NLP problems 5. Understand the mathematical and linguistic foundations underlying approaches to the various areas in NLP 6. Be able to apply NLP techniques to design real world NLP applications such as machine translation, text
ILO 8021	Project Management	<ol style="list-style-type: none"> 1. Apply selection criteria and select an appropriate project from different options. 2. Write work break down structure for a project and develop a schedule based on it. 3. Identify opportunities and threats to the project and decide an approach to deal with them strategically. 4. Use Earned value technique and determine & predict status of the project. 5. Capture lessons learned during project phases and document them for future reference
CSL801	Human Machine Interactions Lab	<ol style="list-style-type: none"> 2: To design innovative and user friendly interfaces. 3: To apply HMI in their day-to-day activities. 4: To criticize existing interface designs, and improve them. 5: To Design application for social Task. 6: To Design application for Technical Tasks
CSL802	Distributed Computing Lab	<ol style="list-style-type: none"> 1. Develop, test and debug RPC/RMI based client-server programs. 2. Implement the main underlying components of distributed systems (such as IPC, name resolution, file systems etc.) 3. Implement various techniques of synchronization. 4. Design and implement application programs on distributed systems.
CSL803	Cloud Computing Lab	<ol style="list-style-type: none"> 1. Adapt different types of virtualization and increase resource utilization. 2. Build a private cloud using open source technologies. 3. Analyze security issues on cloud. 4. Develop real world web applications and deploy on commercial cloud. 5. Demonstrate various service models
CSL804	Computational Lab II	<ol style="list-style-type: none"> 1. Acquire practical knowledge within the chosen area of technology for project development. 2. Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach
CSP805	Major Project- II	The primary objective is to meet the milestones formed in the overall project plan decided in Project - I. The idea presented in Project -I should be implemented in Project -II with results, conclusion and future work. The project will culminate in the production of a thesis by each individual student.