

**Department of Computer Science & Engineering**
**COURSE OUTCOMES**
**I Year I Semester**
**C Programming**

At the end of the course student should be able

S No	Course Code	CO Statement
1	C105.1	<b>Summarize</b> the basics concepts of computers
2	C105.2	<b>Describe</b> the basic concepts of C
3	C105.3	<b>Develop</b> programs using control structures
4	C105.4	<b>Create</b> the programs using functions in C
5	C105.5	<b>Explain</b> the concepts of arrays and strings
6	C105.6	<b>Build</b> C programs using files and dynamic memory allocation

**C Programming lab**

S No	Course Code	CO Statement
1	C109.1	<b>Compile</b> and execute C Programmes.
2	C109.2	<b>Develop</b> programs on basic concepts in C
3	C109.3	<b>Create</b> programs on arrays functions pointers and files.

**I Year II Semester**
**Engineering work shop and IT workshop Lab**

S No	Course Code	CO Statement
1	C117.1	Fabricate <b>different</b> joints in carpentry and develop various types of fits in fitting trade.
2	C117.2	<b>Assemble</b> and disassemble the pc and to install windows XP
3	C117.3	<b>Design</b> documents ,spread sheets and presentations using M.S office

## II Year I semester

### Managerial Economics and Financial Analysis

S No	Course Code	CO Statement
1	C201.1	<b>Understand</b> nature of managerial economics and <b>analyse</b> demand and supply concept
2	C201.2	<b>Apply</b> break even analysis on productions
3	C201.3	<b>Familiarise</b> with different marketing strategies on prices
4	C201.4	<b>Explain</b> business and phases of business life cycle
5	C201.5	<b>Apply</b> different technical accounting statements to various rating
6	C201.6	<b>Explain</b> budgets and its applications

### Object oriented Programming through C++

S No	Course Code	CO Statement
1	C202.1	<b>Summarize</b> the oops concepts in C++
2	C202.2	<b>Describe</b> the basic concepts of classes and objects
3	C202.3	<b>Develop</b> programs using operating overloading and inheritance
4	C202.4	<b>Create</b> the programs on dynamic polymorphism in C++
5	C202.5	<b>Design</b> the programs on templates and exceptions
6	C202.6	<b>Outline</b> the features of STL

### Mathematical Foundation of Computer Science

S No	Course Code	CO Statement
1	C203.1	<b>Solve</b> the problems using predicate logic and predicate calculus
2	C203.2	<b>Evaluate</b> the problems on number theory & mathematical induction
3	C203.3	<b>Solve</b> the problems on functions and set theory
4	C203.4	<b>Explain</b> the features and properties of graphs
5	C203.5	<b>Evaluate</b> the problems on group theory and number theory
6	C203.6	<b>Solve</b> the various types of recurrence relation

## Digital logic design

S No	Course Code	CO Statement
1	C204.1	<b>Define</b> different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.
2	C204.2	<b>Analyse</b> the different switching algebra theorems and apply them for logic functions.
3	C204.3	<b>Design</b> the K-Map for a few variables and perform the reduction of logic function.
4	C204.4	<b>Design</b> the combinational logic circuits for logic functions and define the HDL models of Combinational circuits.
5	C204.5	<b>Analyse</b> the clocked sequential circuits.
6	C204.6	<b>Design</b> the registers and counters.

## Data structures

S No	Course Code	CO Statement
1	C205.1	<b>Apply</b> various Searching and sorting techniques on given data
2	C205.2	<b>Demonstrate</b> various operations in Stacks and Queues and their applications
3	C205.3	<b>Demonstrate</b> various operations in Linked lists and their applications
4	C205.4	<b>Explain</b> the properties of Trees and their traverses
5	C205.5	<b>Construct</b> a Binary Tree for the given data
6	C205.6	<b>Demonstrate</b> the representation of a graph and design the programs for various graph traverses and spanning trees

## Object oriented Programming through C++ lab

S No	Course Code	CO Statement
1	C206.1	<b>Compile</b> and execute any C++ Programme.
2	C206.2	<b>Develop</b> programs on basic concepts in C++
3	C206.3	<b>Create</b> programs on oops concepts using c++.

### Data structures lab

S No	Course Code	CO Statement
1	C207.1	<b>Design</b> programs on linear data structure
2	C207.2	<b>Develop</b> programs on nonlinear data structures
3	C207.3	<b>Create</b> programs on searching and sorting

### Digital logic design lab

S No	Course Code	CO Statement
1	C208.1	<b>Design</b> combinational circuits
2	C208.2	<b>Develop</b> sequential circuits
3	C208.3	<b>Construct</b> ring counters

## II Year II Semester

### Probability and statistics

S No	Course Code	CO Statement
1	C209.1	<b>Solve</b> the problems on random variables and continuous distribution
2	C209.2	<b>Evaluate</b> the problems on standard distribution
3	C209.3	<b>Apply</b> sampling theory on distribution
4	C209.4	<b>Apply</b> various types of errors on two-way classified data
5	C209.5	<b>Solve</b> the problems on correlation and ranking
6	C209.6	<b>Demonstrate</b> the data in statistical quality charts

### JAVA Programming

S No	Course Code	CO Statement
1	C210.1	<b>Summarize</b> the basic concepts of java
2	C210.2	<b>Illustrate</b> the concepts of classes and objects
3	C210.3	<b>Explain</b> the concepts of inherence , packages and exceptions
4	C210.4	<b>Design</b> the programs on multi-threading
5	C210.5	<b>Develop</b> the programs on Applets
6	C210.6	<b>Apply</b> GUI components in Applets

### Advanced data structures

S No	Course Code	CO Statement
1	C211.1	<b>Design</b> and implement external sorting and merging on given data
2	C211.2	<b>Develop</b> various hashing techniques on given data
3	C211.3	<b>Explain</b> various priority queues and heaps
4	C211.4	<b>Apply</b> various algorithms on efficient binary search trees
5	C211.5	<b>Apply</b> various algorithms on efficient multi-way search trees
6	C211.6	<b>Develop</b> various algorithms on digital search structures

### Computer Organizations

S No	Course Code	CO Statement
1	C212.1	<b>Summarise</b> basic structure of computers
2	C212.2	<b>Difference</b> ate various instructions and addressing modes
3	C212.3	<b>Identify</b> various types of instructions
4	C212.4	<b>Outline</b> various input output organization in computer
5	C212.5	<b>Demonstrate</b> various memories in computer
6	C212.6	<b>Explain</b> control unit organization in CPU

### Formal Language Automata Theory (FLAT)

S No	Course Code	CO Statement
1	C213.1	<b>Solve various</b> problems on NFA and DFA
2	C213.2	<b>Evaluate</b> regular expressions , regular grammar and conversion of <b>RE</b> and <b>FA</b>
3	C213.3	<b>Apply</b> derivations and normal forms on contest free grammar
4	C213.4	<b>Construct</b> push down automata per given language
5	C213.5	<b>Construct</b> Turing machine by using various languages
6	C213.6	<b>Identify</b> various classes of problems in Turing machine

**Advanced Data Structures Lab:**

<b>S No</b>	<b>Course Code</b>	<b>CO Statement</b>
1	C214.1	<b>Design</b> various operations on various trees
2	C214.2	<b>Develop</b> programs on minimum cost spanning trees
3	C214.3	<b>Design</b> various algorithms on advanced data structures

**Java Programming Lab:**

<b>S No</b>	<b>Course Code</b>	<b>CO Statement</b>
1	C215.1	<b>Develop</b> programs using oops concepts in java
2	C215.2	<b>Design</b> programs on threads and exceptions
3	C215.3	<b>Build</b> GUI applications in java

**Free Open source software lab**

<b>S No</b>	<b>Course Code</b>	<b>CO Statement</b>
1	C216.1	<b>Explore</b> on various Unix utilities
2	C216.2	<b>Design</b> Shell programs in LINUX environment
3	C216.3	<b>Develop</b> programs for various system calls and operating system features in LINUX environment

## III year I semester

### Compiler design

S No	Course Code	CO Statement
1	C301.1	<b>Summarize</b> the overview of compiler and lexical analyzer
2	C301.2	<b>Design</b> different types of top down parsers and describe the process of syntax analyser
3	C301.3	<b>Develop</b> the different types of bottom up parsers
4	C301.4	<b>Demonstrate</b> the process of semantic analyser
5	C301.5	<b>Illustrate</b> the different types of symbol table implementations and code generation techniques
6	C301.6	<b>Compare</b> the various code optimization techniques

### Data communication

S No	Course Code	CO Statement
1	C302.1	<b>Explain</b> the fundamentals of data communication and networking
2	C302.2	<b>Summarize</b> the features of various transmission medium
3	C302.3	<b>Outline</b> the characteristics of digital transmission
4	C302.4	<b>Examine</b> the features of wireless communication systems
5	C302.5	<b>Explain</b> the importance of telephone instruments and cellular systems
6	C302.6	<b>Apply</b> error control methods on data formats and list out the data communication equipment's

### Principals of Programming Languages (PPL)

S No	Course Code	CO Statement
1	C303.1	<b>Describe</b> the syntax and semantics of different programming languages
2	C303.2	<b>Explain</b> basic data types and basic statements of different programming languages
3	C303.3	<b>Design</b> and implementation of sub programs of different programming languages
4	C303.4	<b>Apply</b> concurrency and event handling on programming.
5	C303.5	<b>Develop</b> programs in schema ML, Prolog
6	C303.6	<b>Summarize</b> logic programming language paradigm

## Data base management systems

S No	Course Code	CO Statement
1	C304.1	<b>Summarise</b> the fundamentals and architecture of DBMS
2	C304.2	<b>Design</b> ER models for real time applications
3	C304.3	<b>Apply</b> SQL Queries, Triggers and cursors on active database
4	C304.4	<b>Apply</b> various normal forms on databases
5	C304.5	<b>Apply</b> Transaction management and concurrency control on databases
6	C304.6	<b>Analyse</b> the storage and indexing in databases

## Operating Systems

S No	Course Code	CO Statement
1	C305.1	<b>Describe</b> the overview of operating systems
2	C305.2	<b>Illustrate</b> process management and scheduling
3	C305.3	<b>Explain</b> the principals of concurrency
4	C305.4	<b>Outline</b> the features of memory management virtual memory
5	C305.5	<b>Summarise</b> the principals of dead locks
6	C305.6	<b>Demonstrate</b> the file system interface and mass storage

## Compiler design Lab

S No	Course Code	CO Statement
1	C306.1	<b>Design</b> lexical analyser, syntax analyser by applying automated tools like LEX and YACC.
2	C306.2	<b>Develop</b> various parsers for the given languages.
3	C306.3	<b>Apply</b> FLEX, LEX on lexical analyser and to apply code optimization techniques for a given language.

## Operating Systems Lab

S No	Course Code	CO Statement
1	C307.1	<b>Develop</b> stimulation programs for various operating systems feature like scheduling
2	C307.2	<b>Design</b> stimulation programs for various operating systems feature like deadlocks
3	C307.3	<b>Construct</b> stimulation programs for various operating systems feature like page replacement algorithms



### Data base management systems Lab

S No	Course Code	CO Statement
1	C308.1	<b>Develop</b> SQL queries on a given relation
2	C308.2	<b>Design</b> programs in PL/SQL
3	C308.3	<b>Construct</b> cursors and triggers on a given table

### Linux Programming Lab

S No	Course Code	CO Statement
1	C309.1	<b>Design</b> Shell programs in LINUX environment
2	C309.2	<b>Develop</b> programs for various system calls and operating system features in LINUX environment
3	C309.3	build programs on IPC.

## III year II semester

### Computer Networks

S No	Course Code	CO Statement
1	C310.1	<b>Compare</b> and contrast between OSI and TCP reference models
2	C310.2	<b>Interpret</b> the features and issues present in Physical and Data link layer
3	C310.3	<b>Apply</b> Error control and Flow control on given data format
4	C310.4	<b>Analyse</b> the features of MAC layer
5	C310.5	<b>Apply</b> various routing algorithms in Network layer to route the packet
6	C310.6	<b>Explain</b> the features of Application and Transport layer

### Data ware housing and Data mining

S No	Course Code	CO Statement
1	C311.1	<b>Summarise</b> the basic concepts of data mining
2	C311.2	<b>Explain</b> the process of pre-processing the data
3	C311.3	<b>Describe</b> the process of building data warehouse
4	C311.4	<b>Apply</b> classification techniques on data source
5	C311.5	<b>Illustrate</b> the alternative classification techniques on data
6	C311.6	<b>Apply</b> clustering algorithms on given data

### Design and Analysis of Algorithms

S No	Course Code	CO Statement
1	C312.1	<b>Evaluate</b> Time complexity and space complexity of various algorithm
2	C312.2	<b>Design</b> and evaluate various divide and conquer algorithms
3	C312.3	<b>Develop</b> analyse various greedy methods algorithms
4	C312.4	<b>Create</b> and analyse various dynamic programming algorithms
5	C312.5	<b>Analyse</b> different back tracking algorithms
6	C312.6	<b>Analyse</b> different branch and bound algorithms

## Software Engineering

S No	Course Code	CO Statement
1	C313.1	<b>Demonstrate</b> fundamental of software engineering and various process models
2	C313.2	<b>Summarize</b> the formation of SRS document and Software design process
3	C313.3	<b>Illustrate</b> the process of function oriented software design and user interface design
4	C313.4	<b>Apply</b> coding and testing in software project
5	C313.5	<b>Explain</b> the software quality process
6	C313.6	<b>Outline</b> the software maintenance and reuse

## Web Technologies

S No	Course Code	CO Statement
1	C314.1	<b>Create</b> web pages using HTML and CSS
2	C314.2	<b>Design</b> programs to validate HTML pages using java script
3	C314.3	<b>Demonstrate</b> the features of DOM and SAX and AJAX
4	C314.4	<b>Develop</b> programs using PHP
5	C314.5	<b>Develop</b> programs on perl
6	C314.6	<b>Design</b> programs on Ruby

## Computer Networks and Network Programming Lab

S No	Course Code	CO Statement
1	C315.1	<b>Design</b> stimulation programs on various networking features like(framing, CRC, routing, broadcasting)
2	C315.2	<b>Develop</b> programs on routing algorithms
3	C315.3	<b>Design</b> programs on socket system calls

### Software engineering Lab

S No	Course Code	CO Statement
1	C316.1	<b>Create</b> SRS document for Real time application
2	C316.2	<b>Evaluate</b> effort using COCOMO and FP methods
3	C316.3	<b>Build</b> SDLC Life cycle phases for an application

### Web Technologies Lab

S No	Course Code	CO Statement
1	C317.1	<b>Design</b> static web pages and validate them with a scripting language
2	C317.2	<b>Develop</b> programs using Ruby
3	C317.3	<b>Build</b> dynamic web pages using PHP

## IV year I semester

### Cryptography and Network security

S No	Course Code	CO Statement
1	C401.1	<b>Explain</b> the basic principles of information security
2	C401.2	<b>Apply</b> symmetric encryption techniques on information
3	C401.3	<b>Apply</b> Asymmetric encryption techniques on information
4	C401.4	<b>Apply</b> data integrity, digital signature, on messages
5	C401.5	<b>Explain</b> the features of PGP SMIME
6	C401.6	<b>Illustrate</b> the features of ip security and web security

### UML and Design Patterns

S No	Course Code	CO Statement
1	C402.1	<b>Summarise</b> the process of OOAD
2	C402.2	<b>Illustrate</b> the process of inception
3	C402.3	<b>Describe</b> the process of elaboration
4	C402.4	<b>Apply</b> design patterns on real time application
5	C402.5	<b>Construct</b> the architecture of uml using various diagrams
6	C402.6	<b>Apply</b> advanced concepts of OOAD on various uml diagrams

### Mobile Computing

S No	Course Code	CO Statement
1	C403.1	<b>Explain</b> the features of Mobile computing
2	C403.2	<b>Summarise</b> the features of MAC layer
3	C403.3	<b>Outline</b> the features of Mobile network layer
4	C403.4	<b>Illustrate</b> the features of mobile transport layer
5	C403.5	<b>Summarise</b> the features of data dissemination and synchronization
6	C403.6	<b>Explain</b> the features of MANET and protocols and platforms used for mobile computing

### Software Testing Methodologies (Elective)

S No	Course Code	CO Statement
1	C404.1	<b>Illustrate</b> the purpose of testing and path testing
2	C404.2	<b>Outline</b> the Basics of testing
3	C404.3	<b>Demonstrate</b> Domain testing and path testing
4	C404.4	<b>Adopt syntax</b> and logic based testing techniques
5	C404.5	<b>Summarize</b> state graphs and transition testing
6	C404.6	<b>Apply</b> automated software testing tools to execute test cases

### Hadoop and Big data (elective II)

S No	Course Code	CO Statement
1	C405.1	<b>Develop</b> data structure programs in java
2	C405.2	<b>Summarize</b> the process of working with big data
3	C405.3	<b>Prepare</b> for data summarization ,query and analytics
4	C405.4	<b>Applying</b> data modelling techniques to large data set
5	C405.5	<b>Creating</b> applications for big data
6	C405.6	<b>Build</b> a complete business data analytic solution

### UML & DP Lab

S No	Course Code	CO Statement
1	C406.1	<b>Construct</b> Use case view and Design view for real time applications
2	C406.2	<b>Design</b> implementation view and process view for real time applications
3	C406.3	<b>Develop</b> architectural view for real time applications

### Mobile Application Development Lab

S No	Course Code	CO Statement
1	C407.1	<b>Design</b> programs on J2me wireless tool kit
2	C407.2	<b>Develop</b> programs on networking with wireless tool kit
3	C407.3	<b>Design</b> the programs in android environment

### Software Testing Lab

S No	Course Code	CO Statement
1	C408.1	<b>Design</b> the test cases in real time environment
2	C408.2	<b>Develop</b> the test cases for a piece of code
3	C408.3	<b>Identify</b> bugs in a given code

### Hadoop and Big data Lab

S No	Course Code	CO Statement
1	C409.1	<b>Develop</b> java programs to implement data structures
2	C409.2	<b>Design</b> programs on pig scripts
3	C409.3	<b>Design</b> programs on map reduce paradigm

## IV year II semester

### Human Computer Interaction

S No	Course Code	CO Statement
1	C410.1	<b>Summarise</b> the characteristics of user interface
2	C410.2	<b>Outline</b> the features of menu selection fill in dialog boxes
3	C410.3	Illustrate the features of command languages and interactive devices
4	C410.4	<b>Explain</b> the quality of service and fashion of user interface
5	C410.5	<b>Illustrate</b> the features of user documentation and help
6	C410.6	<b>Explain</b> the role of information search and information visualization in HCI

### Cloud Computing

S No	Course Code	CO Statement
1	C411.1	<b>Understanding</b> the key dimensions of the challenge of Cloud Computing
2	C411.2	<b>Assessment</b> of the economics , financial, and technological implications for selecting cloud computing for own organization
3	C411.3	<b>Assessing</b> the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications
4	C411.4	<b>Assessment</b> of own organizations' needs for capacity building and training in cloud computing-related IT areas
5	C411.5	<b>Demonstrate</b> the cloud resource management
6	C411.6	<b>Describe</b> the storage systems in cloud



## Distributed Systems

S No	Course Code	CO Statement
1	C412.1	<b>Summarise</b> the characteristics of distributed systems
2	C412.2	<b>Outline</b> the features of inter process communication in DS
3	C412.3	<b>Apply</b> Distributed objects and remote invocation in java RMI
4	C412.4	<b>Explain</b> the operating system support for DS
5	C412.5	<b>Illustrate</b> the features of distributed file system
6	C412.6	<b>Explain</b> the role of Transaction and replications in DS

## Management Science

S No	Course Code	CO Statement
1	C413.1	<b>Explain</b> nature of managerial economics and analyse demand and supply concept
2	C413.2	<b>Apply</b> break even analysis on productions
3	C413.3	<b>Familiarise</b> with different marketing strategies on prices
4	C413.4	<b>Explain</b> business and phases of business life cycle
5	C413.5	<b>Apply</b> different technical accounting statements to various rating
6	C413.6	<b>Explain</b> budgets and its applications