

# GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS)

KUMBAKONAM – 612 001

Affiliated to Bharathidasan University

DST - CURIE Sponsored Institution

IV Cycle of Accreditation



☎ 0435 – 2401391

✉ principal@gcwk.ac.in



## DEPARTMENT OF COMPUTER SCIENCE

<b>Employability</b>	<b>Entrepreneurship</b>	<b>Skill development</b>
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### Semester – I - Core Paper – I

#### Programming in C

Theory Hours : 6

Practical Hours : -

Exam Hours : 3

Marks : CIA ESE 25 75

Course Code : U20CSC101

Credits : 5

#### UNIT I

Overview of C - History of C - Importance of C - Sample Programs - Basic Structure of C Programs - Programming Style - Executing a 'C' Program Constants, Variables, and Data Types Introduction - Character Set - C Tokens - Keywords and Identifiers – Constants – Variable - Data Types - Declaration of Variables - Declaration of Storage Class - Assigning Values to Variable - Defining Symbolic Constants - Declaring a Variable as Constant - Declaring a Variable as Volatile - Overflow and Underflow of Data Operators and Expressions : Introduction - Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators - Increment and Decrement Operators - Conditional Operators - Bitwise Operators - Special Operators - Arithmetic Expressions- Evaluation of Expressions - Precedence of Arithmetic Operators - Type Conversions in Expressions - Operator Precedence and Associativity - Mathematical Function.

#### UNIT II

Managing Input and Output Operation - Introduction - Reading a Character - Writing a Character - Formatted Input - Formatted Output - Decision making and Branching - Introduction Decision Making with IF Statement - Simple IF Statement - The IF....ELSE Statement - Nesting of IF.....ELSE Statement - The ELSE IF Ladder - The Switch Statement - The ?: Operator - The GOTO Statement - Decision Making and Looping- Introduction - The WHILE Statement- The DO Statement- The FOR Statement - Jumps in LOOPS - Concise Test Expressions.

#### UNIT III



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Arrays – Introduction - One-dimensional Arrays - Declaration of One-dimensional Arrays Initializing of One - dimensional Arrays - Two - dimensional Arrays - Initializing Two - dimensional Arrays - Multi-dimensional Arrays - Dynamic Arrays - More about Arrays - Character Arrays and Strings - Introduction - Declaring and Initializing String Variables Reading String from Terminal- Writing Strings to Screen - Arithmetic Operation on Characters - Putting Strings Together - Comparison of Two Strings - String-handling Function - Table of Strings - Other Features of Strings.

## UNIT IV

User-defined Functions- Introduction - Need for User-defined Function- A multi function Program- Element of User-defined Function - Definition of Functions - Return Values and their Types - Function Calls - Function Declaration - Category of Functions - No Arguments and no Return Values - Arguments but no Return Values - Argument with Return Values- No Arguments but Returns a Value - Function that Return Multiple Values - Nesting of Function - Recursion - Passing Arrays to Functions - Passing Strings to Functions - The Scope, Visibility and Lifetime of Variables - Multi file Programs - Structures and Unions - Introduction - Defining a Structure - Declaring Structure Variables - Accessing Structure Members Copying and Comparing Structure Variables - Operations on Individual Members Arrays of Structures - Arrays within Structures - Structures within Structures - Structures and Function – Unions - Size of Structures - Bit Fields.

## UNIT V

Pointers - Introduction - Understanding Pointers - Accessing the Address of a Variable Chain of Pointer - Pointer Expressions - Pointer Increment and Scale Factor - Pointer and Arrays Pointers and Character String - Array of Pointers - Pointers as Function Arguments - Functions Returning Pointer - Pointers to Function - Pointer and Structures - Troubles with Pointer. **File Management in C** - Introduction - Defining and Opening a File - Closing a File - Input / Output Operations on File - Error Handling During I/O Operations - Random Access to Files Command Line Arguments.

### Text Book :


“Programming in C” – E. Balagurusamy - 4<sup>th</sup> edition - Tata McGraw – Hill Publishing company.

### Reference Book :

“ Programming with C ” – schaum series - 2<sup>nd</sup> Edition - Byron S.Gottfried.

### Semester – II - Core Paper III



  
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**OBJECT ORIENTED PROGRAMMING WITH C++**

Theory Hours : 6  
Course Code : U20CSC203  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

**UNIT I**

Object oriented programming: Software Evolution – OOP Paradigm – concepts, Benefits, Object Oriented Languages and Applications.

**UNIT II**

Introduction to basic concepts of C++ Languages – Tokens, keywords, Identifiers, Data Types, Variables, Manipulators – Expression and Control Structures – Functions: main function – function prototyping – Call by Reference – Function Overloading – Friend and Inline functions.

**UNIT III**

Classes and Objects – Constructors and Destructors – Operator Overloading – Type Conversions.

**UNIT IV**

Inheritance – single Inheritance – Multiple Inheritance – Hierarchical, Hybrid Inheritance – Polymorphism – Pointers – Virtual Functions – Console I/O operations.

**UNIT V**

Files – Classes for file stream operations – Opening, Closing and Processing files – End of file Detection – File pointers – Updating a file – Error Handling during file operations – Command line Arguments – Templates – Exception Handling.


**Text Book :**

“OBJECT ORIENTED PROGRAMMING WITH C++” – E. BALAGURUSAMY TATA  
McGraw Hill Publishing Ltd, New Delhi, 1995.

**Reference Books :**

1.”OBJECT ORIENTED PROGRAMMING WITH C++” – Robert  
Lafore.Galgotia,1994.



  
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2. “C++, The Complete Reference”–Herbert Schilt, 3<sup>rd</sup> Edition, Tata McGraw Hill Publishing Ltd,1999.
3. “Let us C++” – YeswantKanetkar, BPB Publication, 1999.
4. Programming with C++ - John R. Hubbard – Schaum’s Outline Series,1996.

### Semester III - Core Paper -V

#### **FUNDAMENTALS OF DATA STRUCTURES AND ALGORITHMS**

Theory Hours : 6  
Course Code : U20CSC305  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

#### **UNIT I**

Arrays and sequential Representations – Ordered Lists – Stacks and Queues – Evaluation of Expressions – Multiple Stacks and queues – singly Linked Lists – Linked Stacks and Queues – Polynomial Addition – Doubly Linked Lists and Dynamic Storage Management – Strings – a case study.

#### **UNIT II**

Trees – Binary tree representations – Tree Traversal – Threaded binary trees – Binary tree representation of trees – Set representations – Decision trees .

#### **UNIT III**


Graphs and Representations – Traversal, Connected Components and spanning trees – Shortest paths and transitive Closure .

#### **UNIT IV**

Algorithms – conventions – Writing Structured Program – Analyzing algorithms – Sorting – Heap sort – Binary search – Finding the maximum and minimum – Merge sort – Quick sort – Selection sort.

#### **UNIT V**



  
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Greedy Method: The general method – Optimal storage on tapes – knapsack problem – Job sequencing with deadlines – Optimal merge patterns – Minimum spanning trees – single source shortest paths.

**Text Books :**

Fundamentals of data structure – Ellis Horowitz and SartajSahini Chapters 2,3,4,5,6.1 to 6.3 (Excluding 2.3,3.2,4.5,4.6,5.8.3,5.9,4.7,4.10,4.12,6.4,6.5).

Fundamental of Computer Algorithms – Elliz Horowitz and sartajsahiniGalgotia Publications.

**Reference Books :**

1. Data Structures – LIPSCHUTA, Tata McGraw Hill, Schaum’s Outline Series. 2. Introduction to Design & Analysis of Algorithms–Goodman(S.E), Hedetniemi (S.T).

**Semester IV – Core Paper - VII**

**PROGRAMMING IN JAVA**

Theory Hours : 5  
Course Code : U20CSC407  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

**UNIT I**

Java Evolution: Java History – Java Features – How Java Differs from C and C++ - Java and Internet – Java and World Wide Web – Web Browsers – Hardware and Software Requirements – Java Support Systems – Java Environment - Overview of Java Language: Introduction – Simple Java Program – More of Java – An Application with Two Classes – Java Program Structure – Java Tokens – Java Statements – Implementing a java program – Java virtual machine – Command line arguments – Programming Style – Constants, Variables and Data types: Introduction – Constants – Variables – Data Types – Declaration of Variables – Giving values to variables – Scope of variables – Symbolic Constants – Type casting – Getting values of Variables – Standard default values.

**UNIT II**

Operators and Expressions: – Arithmetic operators – Relational Operators – Logical Operators – Assignment Operators – Increment and decrement operators – Conditional operators – Bitwise Operators – Special operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Type conversion in Expressions- Operator Precedence and Associativity – Mathematical Functions – Decision making and branching - Decision making and Looping.

**UNIT III**

Classes, Objects and Methods: Defining a class – Fields Declaration – Methods Declaration –



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Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Static members – Nesting of methods – Inheritance: Extending a class – Overloading Methods – Final Variables and methods – Final Classes – Finalizer Methods – Abstract methods and classes – Methods with Varargs – Visibility Control- Arrays, Strings and Vectors: Introduction – One Dimensional Arrays – Creating an Array – Two – dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types – Annotations – Interfaces: Multiple Inheritance – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface variables.

#### **UNIT IV**

Packages - Java API Packages – Using System Packages – Naming Conventions – Creating Packages – Accessing A package – Using a Package – Adding a class to a package – Hiding classes - Static Import – Multithreaded Programming : Creating Threads – Extending the Thread class – Stopping and Blocking a Thread – Life cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the “Runnable” Interface – Managing Errors and Exceptions: Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch statements – Using Finally Statement – Throwing Our Own Exceptions – Using Exceptions for Debugging.

#### **UNIT V**

Applet Programming : How applets differ from Applications – Preparing to write applets – Building applet code – Applet life cycle – Creating an Executable applet – designing a web Page – Applet Tag – Adding Applet to HTML File – Running the applet – More about Applet Tag – Passing parameters to applets – Aligning the display – More about HTML tags - Displaying Numerical values – Getting input from the user – Graphics Programming: The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control loops in applets – Drawing bar charts. Managing Input/Output Files in Java: Concept of Streams – Stream classes - Byte Stream Classes – Character stream classes – using streams – other useful I/O classes – Using the file Class – Input / Output Exceptions – Creation of Files – Reading/Writing characters – Reading/Writing Bytes – Handling primitive data types – Concatenating and Buffering files – Random access files – Interactive input and output – other stream classes.

#### **Text Book :**

“Programming with Java”– E.Balagurusamy, Tata McGraw Hill Publishing Company Ltd, 3<sup>rd</sup> Edition.

#### **Reference Book :**

Java 2 Complete Reference”, Herbert Schildt, Tata Mc Graw HILL, 4<sup>th</sup> Edition.





**III Semester - Part - IV - Non-Major Elective Paper**

**NMEC - FUNDAMENTALS OF PHOTOSHOP**

**Sub Code - 17CS3NMEC1**

**Objective :**

To impart the knowledge about the Photoshop in order to improve the employability skills of the learners.

**UNIT I**

Photoshop: Introduction, Photoshop Program Window- Creating a New File, Saving a File. Working with Image: Image Size, Image Resolution, Editing Images, Color Mode, Setting the Current Foreground and Background Colors.

**UNIT II**

Making and Selections: Making Selection - Moving Portion of an Image – Transforming Selections

**UNIT III**

Painting and Drawing Tools: The Painting Tools- The Brush Tool, The Pencil Tool, The Color Replacement Tool, The History Brush Tool, The Art History Brush Tool, The Gradient Tool. The Drawing Tools – The Rectangle Tool, The Custom Shape Tool, The Freeform Pen Tool.

**UNIT IV**

Layers: Layers Palette – Working with Layers – New Layer via Cut – New Layer via Copy – Hiding / Showing Layers – Flattening Images- Working with Adjustment Layers – Layer Effects.


**UNIT V**

Filters : The Filter Menu – Filter Gallery – Extract Filter – Liquify Filter – Vanishing Point Filter – Artistic Filters – Blur Filters – Brush Stroke Filters – Distort Filters – Noise Filters – Pixelate Filters – Lighting Effects – Difference Clouds – Sharpen Filters – Sketch Filters – Stylize Filters – Other Filters.

**Text Book :**

Comdex DTP Course Kit by Vikas Gupta Published by Dream Tek Press.



  
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**Reference Book :**

“ Adobe Photoshop ” CS by Bakkianathan

**V SEMESTER – PART - IV**

**SKILL BASED ELECTIVE COURSE – III**

**HARDWARE CONCEPTS**

**Sub Code: SBHC**

**UNIT I**

Introduction to computer - Types of computer - computer case - sizes and types – Layout

– Appearance – Microprocessor - Inside a microprocessor - Microprocessor performance.

**UNIT II**

Computer memory - Introduction - Types of Memory - Management of memory - Memory Management bugs - Protected memory – DRAM - Cache memory – Operations – Applications –

Flash memory – SRAM - Virtual memory - BIOS

**UNIT III**

Motherboard – History – Design - CPU sockets - Peripheral card slots - Temperature and Reliability - Chipset - Hard Disk Drive – overview – components - performance characteristics – SCSI – SCSI network - Sound card – Applications - Digital signal Processor - Graphics card.

**UNIT IV**

Computer monitor - Monitor types - Color monitors - Types of monitors - CRT monitor - LCD Monitor-Advantages of LCD - Monitor specifications - TV monitors – LED - Flat panel Displays – HDTV - Curved monitors.

**UNIT V**

Keyboard - Functioning of computer keyboard – Mouse - variants of mouse - Optical mouse -

Interface circuits-Parallel ports-Serial ports- USB features- USB system description.

**Reference books:**



  
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“Hardware” - P.Karthikeyan,

“Hardware BiBle”, Winn L.Rosch

**Reference sites:**

[www.wikipedia.org](http://www.wikipedia.org), [www.atariarchieves.org](http://www.atariarchieves.org)

**Semester – V - Core Paper - IX**

**OPERATING SYSTEMS**

Theory Hours : 5  
Course Code : U20CSC509  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

**UNIT I**

Evolution of Operating Systems – Types of Operating system – Different views of OS – Design and Implementation of Operating Systems – I/O programming concepts – Interrupt structure & processing.

**UNIT II**

Memory Management: Single contiguous Allocation – Partitioned Allocation – Relocatable Partitioned Allocation – Paged and Demand paged Memory management – Segmented Memory Management – Segmented and Demand paged memory management – Swapping and overlay techniques.


**UNIT III**

Processor Management: Job scheduling – process scheduling – functions and policies – Evaluation of Round Robin Multiprogramming performance – Process Synchronization – Race condition – synchronization mechanism – deadly embrace prevention and detect and recover methods.

**UNIT IV**

Device Management: Techniques for Device management – Device characteristics – I/O Traffic controller, I/O scheduler, I/O device handlers – Virtual devices – Spooling.



  
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## UNIT V

File Management: Simple File System – General model of a File system, Physical and Logical File systems. Case studies: DOS, UNIX/LINUX Operating systems.

### Text Book:

1. “Operating Systems” – E. Madnick and John J. Donovan, Tata McGraw Hill Book Company Ltd.,

### Reference Book:

- “Operating Systems (concepts and design) Milan Milenkovic – McGraw Hill International Edition.
- Operating System Concepts: Abraham Silberschatz, Peter B. Galvin, Greg Gagne.
- Operating Systems: Internals and Design Principles William Stalins.

### Semester – V - Core Paper - X

## **COMPUTER ARCHITECTURE & FUNDAMENTALS OF MICROPROCESSOR**

Theory Hours : 5  
Course Code : U20CSC510  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

### Course Objective :

To gain knowledge about the architecture of computer and to understand the concepts of CPU, ALU Design, Input Output Instruction format and different processors.

## UNIT I

Digital Logic Circuits – Digital Computers – Logic Gates – Boolean Algebra – Map Simplification Combinational Circuits – Flip Flops – Sequential Circuits – Digital Components – Integrated Circuits – Decoders – Multiplexers - Registers – shift registers – Binary Counters – Memory UNIT

## UNIT II

Register transfer and Micro operations - Register Transfer Language - Register Transfer -





Bus and Memory Transfer - Arithmetic Micro operations - Logic Micro operations - Shift Micro operations - Arithmetic Logic Shift UNIT.

### **UNIT III**

Central Processing UNIT – Introduction - General Register organization - Stack organization - Instruction formats - Addressing modes - Data Transfer and Manipulation - Program Control - Reduced Instruction Set Computer (RISC) Computer Arithmetic – Introduction – Addition and Subtraction – Multiplication Algorithm – Division Algorithms.

### **UNIT IV**

Microprocessor Architecture – Intel 8085 - Instruction Cycle - Timing Diagram – Intel 8085 Instructions - Programming of microprocessors: Introduction – Assembly language – High level language – Areas of Applications of various languages – MACRO – Microprogramming.

### **UNIT V**

Assembly Language Programming - Simple Examples - Addition and Subtraction of Binary and Decimal Numbers- Complements - Shift – Masking - Microprocessor Applications – 7-Segment LED Display – Measurement of physical Quantities – Temperature measurement & control – Water level indicator - Microprocessor Based Traffic Control.

#### **Text Books :**

1. For UNIT 1, 2, 3

Computer System Architecture, M. Morris Mano Pearson Education, 3<sup>rd</sup> Edition, 4<sup>th</sup> Indian Reprint, 2004.

2. For UNIT 4, 5

Fundamentals of Microprocessor and Microcomputers - Badri Ram-5<sup>th</sup> revised and enlarged edition- Dhanpat Rai Publication-2001.

I UNIT: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7.

II UNIT: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7

III UNIT: 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 10.1, 10.2, 10.3, 10.4

IV UNIT: 3.1, 3.2, 3.3, 4.6, 5.1, 5.2, 5.3, 5.4, 5.14

V UNIT: 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18-9.3-9.6-9.6.1, 9.6.4, 9.8.





**Semester – V – MBEC - I - Paper - I**

**COMPUTER GRAPHICS**

Theory Hours : 5  
Course Code : U20CS5EC1  
Practical Hours : -  
Credits : 4  
Exam Hours : 3  
Marks : CIA ESE 25 75

**Course Objective :**

To impart the basic principles of generating primitives, shapes, package development, interactive graphics, raster graphics, two and three dimensional graphics and their transformations.

**UNIT I**

Overview of graphics Systems – Video Display Devices – Raster scan systems – Random scan systems – Monitors and Workstations – Input Devices- Hard-Copy Devices - Graphics software. OUTPUT PRIMITIVES – Points and Lines – Line – Drawing Algorithms-Loading the Frame Buffer-Line function- Circle-Generating Algorithms –Ellipse Generating Algorithms-Filled-Area Primitives-Fill Area Functions- Cell Array-Character Generation.

**UNIT II**

Attributes of output primitives :Line Attributes – Curve Attributes-Color and Grayscale Levels – Area-Fill Attributes – Character Attributes-Bundled Attributes-Inquiry Functions-Antialiasing.TWO-DIMENSIONAL GEOMETRIC TRANSFORMATIONS – Basic Transformations – Matrix Representations and Homogeneous Coordinates – Composite Transformations – Other Transformations .

**UNIT III**

Two Dimensional Viewing – The viewing pipeline-Viewing coordinate Reference Frame-Window-to-viewport Coordinate Transformation-Two-Dimensional Viewing Functions-Clipping Operations – Point Clipping-Line Clipping-Polygon Clipping – Curve Clipping-Text Clipping – Exterior Clipping-GRAPHICAL USER INTERFACES AND INTERACTIVE INPUT METHODS – The User Dialogue-Input of Graphical Data-Input Functions-Initial Values for Input-Device Parameters-Interactive Picture-Construction



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Techniques.

#### **UNIT IV**

Three Dimensional concepts – Three- Dimensional Display Methods-Three Dimensional Graphics Packages-THREE-DIMENSIONAL GEOMETRIC AND MODELING TRANSFORMATIONS –Translation-Rotation-Scaling-Other Transformations –Composite Transformations –Three Dimensional Transformation Functions- Modeling and Coordinate Transformations.

#### **UNIT V**

Visible Surface Detection Methods – Classification of Visible-Surface Detection Algorithms – Back Face Detection-Depth-Buffer Method-A-Buffer Method-Scan-Line Method-Depth-Sorting Method-BSP-Tree Method-Area-Subdivision Method-Octree Methods-Ray-Casting Method-Curved Surfaces-Wireframe Methods-Visibility Detection Functions.

#### **Text Book :**

“COMPUTER GRAPHICS”-DONALD HEARN,M.PAULINE BAKER 2<sup>nd</sup> Edition, PHI Private Limited.

UNIT 1 – Chap 2 (2.1 to 2.7),Chap 3 (3.1 to 3.6,3.11 to 3.14). UNIT II – Chap 4 (4.1 to 4.8), Chap 5 (5.1 to 5.4). UNIT III – Chap 6 (6.1 to 6.11), Chap 8 ( 8.1 to 8.5). UNIT IV – Chap 9 (9.1 to 9.2), Chap 11 (11.1 to 11.7) , UNIT V – Chap 13 (13.1 to 13.13).

#### **Reference Book :**

“Principles of interactive Computer Graphics” – William M.Newman and Sproull.

### **Semester VI - Core Paper – XIII**

### **DATABASE SYSTEM CONCEPTS**

Theory Hours : 6  
Course Code : U20CSC613  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

#### **Course Objective :**



  
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- To know the fundamentals of Database systems and file systems. To experience the basic SQL functionalities.

## UNIT I

Introduction : Database - Database Design : Overview of the design Process – ER Model, Constraints, Removing Redundant Attributes in Entity sets – ER Diagram - Reduction to Relational Schema.

## UNIT II

Relational Database – Introduction to Relational Model – Introduction to SQL - Intermediate SQL – Formal Relational Query Language : Relational Algebra. Database Design : Features of good relational design – Atomic domains & First Normal Forms – Decomposition using functional dependencies – Algorithms for decomposition – decomposition using multi value dependency.

## UNIT III

Storage and File Structure : Overview of Physical Storage Media – File Organization – Organization of Records in Files - Data Dictionary Storage – Indexing and Hashing : Basic Concepts – Ordered Indices – B+ Tree Index Files – B- Tree Index Files - Static Hashing – Dynamic Hashing.

## UNIT IV

Transaction : Transaction Concept – Simple Transaction model – Storage structure – Transaction Atomicity & durability. Transaction isolation - Serializability - Concurrency Control : Lock Based Protocols – Timestamp Based Protocols – Validation Based Protocols - Recovery System : Failure Classification – Recovery and Atomicity – Recovery Algorithms.

## UNIT V

PL/SQL : PL/ SQL Blocks – How PL/SQL Works – Integrating SQL in a PL/SQL Program – Triggers – Stored Procedures and Functions – Packages – Cursors – Transactions.

### Text Book:

1. "DATABASE SYSTEM CONCEPTS" –6<sup>th</sup> Edition - Abraham Silberschatz, Henry F. Korth, S. Sudarshan.

(UNIT I to V). UNIT I – Chapters 1, 7,

UNIT II – Chapters 2, 3, 4, 6, 8


UNIT III – Chapters 10, 11

UNIT IV – Chapters 14, 15, 16

UNIT V (Chapters 15 to 20) : Learn Oracle 8i by Jose A. Ramalho, BPB Publications

### Reference Book :



  
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1. “An introduction to database system “ –Bipin C desai
2. Oracle 8i A Beginner’s Guide by Michael Abbey, Ian Abramson, Michael Corey.

**Semester VI - Core Paper – XIV**

**PHP SCRIPTING LANGUAGE**

Theory Hours : 6  
Course Code : U20CSC614  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

**UNIT I**

Introduction to XHTML : Introduction – Editing XHTML – First XHTML example W3C XHTML validation service – Headings – Linking c- Images – Special characters and horizontal rules – Lists – Tables – Forms – Internal linking – Meta elements – Web resources.

**UNIT II**

JavaScript : Introduction to Scripting – JavaScript Control statements – Control structures – if selection statement – if- else selection statement – while repetition statement – Assignment operators – Increment and Decrement operators – for repetition statement – Examples using for statement – Switch multiple - selection statement – do – while repetition statement – break and continue statements – labeled break and continue statements – Logical operators – Functions – Arrays.

**UNIT III**

Essentials of PHP - Operators and Flow Control - Strings and Arrays.

**UNIT IV**

Creating Functions - Reading Data in Web Pages - PHP Browser - Handling Power.

**UNIT V**

File Handling – Working with Databases – Sessions, Cookies, and FTP

**Text Books :**



  
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1. Internet and World Wide Web- How to program 4<sup>th</sup> Edition– P.J.Deitel, H.M.Deitel, Pearson Edition.(UNIT I & II)
2. The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition. (UNIT III,IV,V)

**Reference Book:**

1. Spring into PHP5 – Steven Holzer, Tata McGraw Hill Edition.

**Semester I - Core Paper III – CC III**

**PYTHON PROGRAMMING**

Theory Hours : 6  
Course Code : P21CSC103  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

**UNIT I**

**BASICS** – Python – Variables – Executing Python from the command line – Editing python files – python reserved words – Basic syntax – commands – Standard Data types – Relational Operator – Logical Operators – Bitwise Operators – Simple Input and Output.

**UNIT II**

**CONTROL STATEMENTS** – Control flow and syntax – Indenting – If Statement – Statements and Expressions – String Operations – Boolean Expressions – While loop-break and continue- for loop.

**LISTS:** List-list slices - list methods – list loop- mutability-aliasing-cloning lists- list parameters.

**TUPLES:** Tuple assignment, tuple as return value- sets- Dictionaries.

**UNIT III**

**FUNCTIONS:** Definition- passing parameters to a function- Built-in-functions- Variable Number of Arguments- Scope- Type conversion- Type coercion- Passing Functions to a Function- Mapping Functions in a Dictionary- Lambda- Modules- Standard Modules- sys-math time-dir-help Function.



  
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#### UNIT IV

**ERROR HANDLING:** Run time Errors- Exception Model- Exception Hierarchy Handling Multiple Exceptions- Data Streams- Access modes Writing- Data to a file Reading Data from a File- Additional File methods- Using pipes as Data Streams- Handling IO Exceptions- Working with Directories.

#### UNIT V

**OBJECT ORIENTED FEATURES:** Classes principles of Object orientation- Creating Classes- Instance Methods- File Organization- Special methods- Class Variables- Inheritance Polymorphism- Type identification- Simple Character Matches- Special characters- Character classes- Quantifiers- Dot character- Greedy matches- Grouping- Matching at Beginning or End Math Objects- Substituting- Splitting a string- Compiling Regular Expressions.

#### Text Books :

- 1) Mark Summerfield- Programming in Python 3: A Complete introduction to the Python Language, Addison- Wesley Professional, 2009.
- 2) Martin C.Brown, - Python : The Complete Reference, McGraw- Hill, 2001.

#### Reference Books :

1. Allen B. Downey, “ Think Python: How to Think Like a Computer Scientist”, 2<sup>nd</sup> edition, Updated for Python 3, Shroff / O’Reilly Publishers, 2016
2. Guido van Rossum and Fred L. Drake Jr, - An introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.
3. Wesley J Chun, - Core Python Applications Programming||, Prentice Hall, 2012.

#### Semester I – MBEC – I - Paper I

#### **PARALLEL PROCESSING**

Theory Hours : 5  
Course Code : P21CS1MBE1:1  
Practical Hours : -  
Credits : 4  
Exam Hours : 3  
Marks : CIA ESE 25 75





### **UNIT I**

Introduction to Parallel Processing : Evolution of Computer Systems – Parallelism in Uniprocessor systems – Parallel Computer Structures – Architectural Classification Schemes – Parallel Processing Applications.

### **UNIT II**

Memory and Input – Output Subsystems : Hierarchical Memory Structure – Virtual Memory Systems – Memory Allocation and Management – Cache Memories and Management.

### **UNIT III**

Principles of pipelining and Vector Processing : Pipelining – Instruction and Arithmetic pipelines – Principles of Designing pipelined processors – Vector processing Requirements – Vectorization and Optimization Methods.

### **UNIT IV**

SIMD Array processors – SIMD Interconnection Networks – Parallel Algorithms for Array processors – Associative Array processing.

### **UNIT V**

Functional Structures – Interconnection Networks – Multiprocessor Operating Systems – Multiprocessor Scheduling Strategies – Parallel Algorithms for Multiprocessors.

### **Text Book :**

Computer Architecture and Parallel Processing “ Kai Hwang”, “ Faye’ A. Briggs”.

### **Reference :**

1. “Programming massively Parallel Processors” by Kirk.
2. “An introduction to parallel programming” by Pacheco.
3. “ Parallel Computers : Architecture and Programming” by V. Rajaraman and C. Sivarammurthy.
4. “ Computer, Architecture and Parallel Processing” by Bharat Bhushan Agarwal and Sumit Prakash tayal.





**Semester II - Core Paper VI – CC VI**

**ADVANCED JAVA PROGRAMMING**

Theory Hours : 6  
Course Code : P21CSC206  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

**UNIT I**

JDBC: Java API for Database Connectivity: Introduction to JDBC – Connecting to a Remote Database – Performing Database Queries and Updates – The JDBC API – Advanced Techniques.

**UNIT II**

**Networking:** Networking Basics – Java and the Net - InetAddress – TCP/IP client sockets– URL – URL Connection – TCP/IP Server sockets – A Caching Proxy HTTP Server - Data grams – Inet4Address and Inet6Address – The URI Class

**UNIT III**

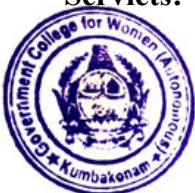
Images: File Formats – Image Fundamentals – Image Observer – Double Buffering – Media Tracker – Image Producer – Image Consumer – Image Filter – Cell Animation – Additional Imaging Classes. New I/O, Regular Expressions, and Other Packages: The Core Java API Packages – New I/O Packages – Regular Expression Processing – Reflection – RMI – Text Formatting.

**UNIT IV**

Java Beans: What is a Java Bean? – Advantages of Java Beans – Application Builder Tools – Using the Bean Developer Kit – JAR Files – Introspection – Developing a Simple Bean Using the BDK – Using Bound Properties – Using the Bean Info Interface – Constrained Properties – Persistence – Customizers – The Java Bean API – Using Bean Builder. A Tour of Swing: JApplet – Icons and Labels – Text Fields – Buttons – Combo Boxes – Tabbed Panes – Trees – Tables - AWT Classes Working with Graphics, Color and Font.

**UNIT V**

**Servlets:** Background – The Life Cycle of a Servlet – Using Tomcat For Servlet



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Development – A simple Servlet – The Servlet API – The javax.servlet Package – Reading Servlet Parameters – The javax.servlet.http Package – Handling HTTP Requests and Responses – Using Cookies – Session Tracking – Security Issues.

**Text Book(s):**

1. “Java 2 Programming Bible”, Aaron Walsh, Justin Couch and Daniel H. Steinberg – IDG Books India (P) Ltd, First Edition 2000 (UNIT I: Chapter – 16).
2. “The Complete Reference: Java 2”, Herbert Schildt, Tata McGraw Hill, 2002. (Chapter – 18,19,20,23,24,25,26,27)

**Reference Books:**

1. Deitel&Deitel, “Java How to Program”, Prentice Hall, 5<sup>th</sup> Edition, 2002.
2. Peter Hagggar, “Practical java: Programming Language Guide”, Addison – Wesley Pub Co, 1<sup>st</sup> Edition, 2000.
3. Bruce Eckel, “Thinking in Java”, Pearson Education Asia, 2<sup>nd</sup> Edition, 2000.

**Semester II - Core Paper VII – CC VII**

**COMPILER DESIGN**

Theory Hours : 5  
Course Code : P21CSC207  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

**UNIT I**

Introduction to the phase of the Compilers – Lexical Analysis, Regular expression, Non-Deterministic automata, deterministic automata equivalent to NFA – Minimizing the states of DFA – implementation of Lexical analyzer

**UNIT II**

Syntax Analysis – Top down parsing concepts – Bottom up parsing, handle pruning, shift reducing parsing.





### UNIT III

Intermediate code generation: syntax directed definition, construction of syntax trees – Top down translation, bottom up evaluation of inherited and attributed recursive evaluations, assigning space of compiler construction time – Type checking .

### UNIT IV

Storage Organization: Storage organization, storage allocation strategies, parameter parsing – Symbol tables – Dynamic storage allocation, Intermediate languages – Representation of declarations – Assigning statement, Boolean expressions – Back Patching, procedure calls.

### UNIT V

Code generation & Optimization: Design of a code generators – Run time storage management, basic blocks and flow graphs, register allocation & assignment, DAG representation of basic blocks, peep hole optimization, code optimization – the principle source of optimization, optimization of basic blocks, global data flow analysis, loop optimization

### Text Books:

1. “Compilers Principles Technical and Tools” – Alfred Aho, Ravi
2. “Compiler construction Principle” – Dhamdare

### Reference Book:

1. “Compiler Design” – Reinhard Wilhelm 1995 edition.

### Semester III - Core Paper – X – CC X


## **DATA MINING**

Theory Hours : 6  
Course Code: P21CSC310  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

### UNIT I

Introduction: Why data Mining? – What is Data Mining? - What kind of Data can be mined? – What kind of Data can be mined? - Which Technologies are used? – Which kinds of Applications are Targeted? – Major Issues in Data Mining – Getting to know your data: Data



  
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objects and Attribute Types – Basic Statistical Descriptors of data – Data Visualization – Measuring Data Similarity and Dissimilarity – Data Preprocessing: Data Preprocessing: An Overview – Data Cleaning – Data Integration – Data Reduction – Data Transformation and Data Discretization.

## **UNIT-II**

Data Warehousing and Online Analytical Processing : Data warehouse: Basic concepts – Data warehouse Modeling: Data Cube and OLAP – Data Warehouse Design and Usage – Data warehouse implementation – Data generalization by attribute oriented induction – Mining Frequent Patterns, Associations And Correlations :Basic Concepts And Methods: Basic concepts – frequent itemset mining methods – which patterns are interesting? – pattern evaluation methods.

## **UNIT III**

Classification: Rule Based Classification – Model evaluation and selection – Techniques to improve classification accuracy – Classification: Advanced Methods: Classification by Backpropagation – Support vector machines – Classification using frequent patterns – Lazy learners (or learning from your neighbors) – Other classification methods – Addition topics regarding classification.

## **UNIT IV**

Cluster Analysis: Basic Concepts and methods: Cluster Analysis – Partitioning methods – Hierarchical methods – Density based methods – Grid based methods – Evaluation of Clustering.

## **UNIT V**

Outlier Detection: Outliers and Outliers Analysis – Outlier Detection methods – Statistical Approaches – Proximity based approaches – Cluster based approaches – Classification based approaches – Mining contextual and collective outliers – Outlier detection in high dimensional data.

### **Text Book :**

1. Data mining Concepts and techniques – Jiawei Han, MichelineKamber, Jian Pei, Third Edition, MK Publications. UNIT I (Chapter 1, 2 & 3), UNIT II (Chapter 4& 6), UNIT III (Chapter 8 & 9), UNIT IV (Chapter 10), UNIT V (Chapter 12)

### **Reference Books:**

1. Insight to data Mining Theory and Practice, K.P.Soman&ShyamDiwakar and V.Ajay, Prentice Hall of India, 2006 (ISBN – 81-201-2897-3)
2. Introduction to Data mining with case studies, G.K.Gupta, Prentice Hall India, 2006





(ISBN 81-203-3053-6).

**Semester III - Core Paper – XI – CC XI**

**DATA ANALYTICS**

Theory Hours : 6  
Course Code : P21CSC311  
Practical Hours : -  
Credits : 5  
Exam Hours : 3  
Marks : CIA ESE 25 75

**UNIT I**

Introduction to Big Data : Introduction – Importance of Big Data – Understanding the waves of managing Data – Big Data Management Architecture – Examining Big Data Types : Structured Data and Unstructured Data – Integrated Data types into Big Data Environment – Distributed Computing – Need of Distributed Computing Big Data.


**UNIT-II**

Technology Foundation for Big Data : Big Data Technology Components Exploring the Big Data stack - Big Data Analytics - Big Data Applications – Understanding the Basics of Virtualization – The importance and Virtualization to Big Data – Network Virtualization – Processor and Memory Virtualization – Data and Storage Virtualization – Examining the Cloud and Big Data – Making use of the Cloud for Big Data.

**UNIT III**

Big Data Management : RDBMS are Importance in a Big Data Environment – Non Relational Database – Key Value Pair Database – Document Database – Columnar Database – Graph Database – Spatial Database – Map Reduced Fundamentals – Exploring the world of Hadoop – Explaining Hadoop – HDFS Hadoop Map Reduce.



  
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#### **UNIT IV**

Analytics and Big Data : Using Big Data to get Results – Basic Analytics - Advanced Analytics – Operationalized Analytics – Modifying Business Intelligence Products to handle Big Data - Big Data Analytics Solution – Understanding Text Analytics and Big Data : Exploring Unstructured Data – Understanding Text Analytics - Text Analytics Tools for Big Data.

#### **UNIT V**

Big Data Implementation : Integrating Data Sources – Identifying the Data you Need – Understanding the Fundamentals of Big Data Integration – Defining Traditional ETL - Understanding ELT, Extract, Load and Transform – Prioritizing Big Data Quality – Best Practices for Data Integration in a Big Data world.

#### **Text Book :**

1. “Big Data for Dummies” – by Judith Hurwitz, Alan Nugent- Dr. Fern Halper and Marcia Kaufman.

#### **Reference Books:**

1. Big Data Fundamentals Concepts, Drivers & Techniques – Thomas Erl, Pearson India.
2. BIG DATA IN PRACTICE – Bernard Marr, Wiley.
3. BIG DATA .. AND ANALYTICS – Seema Acharya, SubhashiniChellappan, Wiley.

### **Semester IV – Core Paper XIII – CC XIII**


#### **OPEN SOURCE TECHNOLOGIES**

Theory Hours : 6  
Course Code : P21CSC413  
Practical Hours : - Credits : 6 Exam Hours : 3 Marks : CIA ESE 25 75

#### **UNIT - I**

Open Source - Introduction : Open Source – Open Source vs. Commercial Software –



  
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Linux: Introduction - Download and Install - Decisions, Decisions – Linux Partition Sizes - Accounts - Security - Basic UNIX: Shell - Owner, Groups, Permissions, Ownership - Processes - PATH and Environment - Commands-Basic File System Essentials - Useful Programs.

## UNIT - II

Apache Web server: Starting and Stopping and Restarting Apache-Configuration  
- Securing Apache - Create the Web Site-Apache Log Files.

## UNIT - III

My SQL: Commands - Database Independent Interface - Tables – Loading and Dumping Database.

## UNIT - IV

PHP: Embedding PHP into HTML -Configuration - Language Syntax: Variables - Data Types - Web variables - Operators - Flow Control Constructs Writing PHP Papers.

## UNIT - V

Built in PHP function - Important Functions - Array Functions – String Functions - Other Functions - PHP and MySQL: MySQL Functions.

### Text Book :

James Lee and Brent Lee “Open Source Development with LAMP -Using Linux, Apache, My SQL ,Perl and PHP”, Pearson Education , 2009.

### Reference Book :

JsonGerner, Elizabeth Naramore, Morgan Owens and Matt Warden, “Professional LAMP -Using Linux, Apache, My SQL and PHP5Web development”, Wiley Publisher,2006.

### Semester IV – MBEC IV – Paper - I

### **DEEP LEARNING**

Theory Hours : 6 Course Code : P21CS4MBE4:1 Practical Hours : - Credits :  
4 Exam Hours : 3 Marks : CIA ESE 25 75



  
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## UNIT - I

Introduction : Historical trends in Deep Learning . Machine Learning Basics : Learning algorithms Supervised Learning algorithms, Unsupervised Learning algorithms, Challenges Motivating Deep Learning.

## UNIT - II

Deep Forward Networks : Learning XOR, Gradient based learning, Hidden Units, Architecture Design, Back Propagation and other Differentiation Algorithms.

## UNIT - III

Convolutional Networks: The Convolutional Operation, Motivation, Pooling, Convolution and Pooling as an infinitely strong prior, variants of the Basic Convolution Function, Structured outputs, Data types, Efficient Convolution Algorithms.

## UNIT - IV

Autoencoders : Undercomplete Autoencoder - Regularized Autoencoders - Representational power – Layer size and Depth - Stochastic Encoders and Decoders - Denoising Autoencoders – Learning Manifolds with Autoencoders – Contractive Autoencoders - Predictive Sparse Decomposition – Applications of Autoencoders.

## UNIT - V

Applications : Large scale Deep Learning – Computer vision – Speech Recognition - Natural Language Processing – Other Applications.


### Text Book :

Deep Learning – Ian Goodfellow, Yoshua Bengio & Aaron Courville, MIT Press, 2016.

### Reference Books :

1. Fundamentals of Deep learning and Computer Vision by Nikhil Singh Paras Ahuja, BPB Publications.
2. A Practical Approach for Machine Learning and Deep Learning Algorithms : Tools and Techniques using MATLAB and Python by Abhishek Kumar Pandey, Pramod Singh Rathore, Dr. S. Balamurugan.



  
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**Semester II - Core Paper VIII**

**PROGRAMMING IN C# AND .NET FRAMEWORK**

**Sub Code: P17CSC208**

**Objective :**

To understand the goals and Objectives of the .NET Framework. To apply C#.NET programming techniques to various real world problems.

**UNIT I**

Review of OOP Concepts – Overview of .NET Framework – Basic Elements of C# - Program Structure and simple Input and Output Operations – Operators and Expressions – Statement – Arrays and Structures.

**UNIT II**

Inheritance - Namespace – Polymorphism – Interface and Overloading – Multiple Inheritance – Property – Indexes – Delegates – Publish / Subscribe Design patterns – Operator Overloading – Method Overloading.

**UNIT III**

C# Concepts for creating Data Structures – File Operation – File Management systems – Stream Oriented Operations – Multitasking – Multithreading – Thread Operation – Synchronization.

**UNIT IV**

Working with XML - Techniques for Reading and Writing XML data – using XPath and Search XML – ADO.NET Architecture – ADO.NET Connected and Disconnected Models – XML and ADO.NET – Simple and Complex Data Binding – Data Grid View Class.

**UNIT V**

Application Domains – Remoting – Leasing and Sponsorship - .NET Coding Design Guidelines – Assemblies – Security – Application Development – Web Services – Building an XML Web Service – Web Service Client – WSDL and SOAP – Web Service with Complex Data Types – Web Service performance.

**Text Books :**

1. S. ThamaraiSelvi and R.Murugesan “A Textbook on C#”, Pearson Education,2003.
2. Stephen C.Perry “ Core C# and .NET”, Pearson Education ,2006.



  
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**Reference Books :**

1. Jesse Liberty, “Programming C#”, Second Edition, O’ Reilly Press,2002.
2. Robinson et al, “Professional C#”, Fifth Edition, Wrox Press, 2002.
3. Herbert Schildt, “ The Complete Reference: C# “, Tata McGraw Hill, 2004.
4. Andrew Troelsen , “C# and the .NET Platform”, A! Press,2003.
5. Thuan Thai and Hoang Q. Lam, “.NET Framework Essentials, Second Edition, O’Reilly, 2002.

**Semester II – Elective II- Paper I**

**NETWORK SECURITY**

**Sub Code: P21CSCEC2:1**

**UNIT I**

Introduction: Security Trends – The OSI Security Architecture- Security Attacks – Security Services – Security Mechanisms – A Model for Network Security – Classical Encryption Techniques: Symmetric Cipher Model – Substitution Techniques – Transposition Techniques – Rotor Machines – Steganography.

**UNIT II**

Block ciphers and the Data Encryption Standard: Block cipher principles – The Data Encryption Standard – The Strength of DES – Differential and Linear Cryptanalysis – Block Cipher Design Principles- Public-Key Cryptography and RSA: principles of Public key Cryptosystems – The RSA Algorithm.

**UNIT III**

Authentication Applications: Kerberos – X.509 Authentication Service – Public-key Infrastructure – Electronic Mail Security: Pretty Good Privacy – S/MIME.

**UNIT IV**

IP Security: IP Security Overview – IP Security Architecture – Authentication Header – Encapsulating Security Payload – Combining Security Associations – Key Management – Web Security: Web Security Considerations – Secure Socket Layer and Transport Layer Security – Secure Electronic Transaction.

**UNIT V**

Intruders: Intruders – Intrusion Detection – Password Management – Malicious Software: Viruses and Related Threats – Virus Countermeasures – Distributed Denial of Service Attacks – Firewalls: Firewall Design Principles – Trusted Systems – Common Criteria for Information Technology Security Evaluation.

**Text Book :**



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1. William Stallings, Cryptography and Network Security-Principles and Practices, Prentice-Hall, Fourth Edition, 2003

**Reference Books :**

1. Johannes A. Buchaman , Introduction to cryptography, Springer-Verlag.
2. Atulkahate , Cryptography and Network Security, TMH.

**Semester III – Core Paper – Paper XI**

**WEB TECHNOLOGY**

**Sub Code: P17CSC311**

**UNIT I**

XHTML : Introduction – Editing XHTML – First XHTML Example – W3C XHTML Validation Service – Headings – Linking – Images – Special Characters and Horizontal Rules – Lists – Tables – Forms – Internal Linking – Meta Elements.

**UNIT II**

Cascading Style Sheets : Introduction – Inline Styles – Embedded Style Sheets – Conflicting Styles – Linking External Style sheets – Positioning Elements – Backgrounds - Element Dimensions – Box Model and Text Flow – Media Types – Building a CSS Drop - down Menu – User Style Sheets - CSS 3.

**UNIT III**

JavaScript : Introduction to scripting - Control Statements– Java Script Functions – Function Definitions – Random number generation – Recursion Vs Iteration – Java Script Arrays – Declaring and Allocating Arrays – Examples Using Arrays – Objects – Introduction – Introduction to Object Technology – Math Object – String Object – Date Object - Cookies.

**UNIT IV**

XML and RSS - Introduction – XML Basics – Structuring Data – XML Namespaces – Document Type Definitions (DTDs) – W3C XML Schema Documents – XML Vocabularies - Extensible StyleSheet Language and XSL Transformations – Document Object Model – RSS.

**UNIT V**

Ajax-Enabled Rich Internet Applications- Introduction – Traditional Web Applications vs. Ajax Applications - Rich Internet Applications (RIAs) with Ajax – History of Ajax – “Raw” Ajax Example Using the XML HttpRequest Object – Using XML and DOM – Creating a Full Scale Ajax – Enabled Application – Dojo Toolkit.

**Text book :**

Deitel&Deitel, Goldberg, “Internet and world wide web – How to Program”, 4<sup>th</sup> Edition,



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Pearson International Edition.

**Reference book :**

“Web Technology”, S. Padmapriya, Scitech Publication (India) Pvt. Ltd.

**Semester III – Elective III – Paper III**

**DIGITAL IMAGE PROCESSING**

**Sub Code: P17CS3EC3:3**

**UNIT I**

Introduction And Digital Image Fundamentals: Introduction - What is Image Processing examples of fields that uses DIP Fundamentals step in DIP. Digital image fundamentals – image sensing and acquisition, Image sampling and quantization – Basic relationship between pixels.

**UNIT II**

Image Enhancement Techniques: Some basic intensity transformation functions – Histogram processing Fundamental steps of spatial filtering – smoothing spatial filters.

**UNIT III**

Image Restoration: Model of Image Degradation/restoration process – noise models – restoration in the presence of Noise only Spatial filtering.

**UNIT IV**

Image Compression : Fundamentals – Coding redundancy – Spatial and temporal redundancy – Irrelevant information. Some basic compression methods: Huffman coding – arithmetic coding – LZW coding – Run Length coding – Bit-plane coding.

**UNIT V**

Image Segmentation And Representation : Morphological image processing: preliminaries – Erosion and Dilation. Fundamentals – point, line, and Edge detection: Line Detection – Basic edge detection – More advanced techniques for Edge detection – Edge linking and boundary detection – Thresholding

**Text Book :**

Digital Image Processing, Third Edition, Rafael C. Gonzalez and Richard E. Woods, Pearson Education, 2008. Chapters: 1.1, 1.3, 1.4, 2.3, 2.4, 2.5, 3.2-3.5, 5.1-5.3, 8.1.1, 8.1.2, 8.2.3-8.2.5, 8.2.7, 9.1, 9.2, 10.1, 10.2.3, 10.2.5-10.2.7, 10.3

**Reference Books :**



  
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1. Fundamentals of Digital Image Processing, Anil K. Jain, Prentice Hall of India, 1989.
2. Digital Image Processing and Analysis, B. Chandra and D. Dutta Majumder, PHI, New Delhi, 2006.

**Semester III - NMEC - I**

**PART – IV - NON MAJOR ELECTIVE COURSE**

**1. FUNDAMENTALS OF PHOTOSHOP LAB**

Theory Hours : -

Course Code : U21CS3NME1:1

Practical Hours : 2

Credits : 2

Exam Hours : 3

Marks : CIA ESE 40 60

**List of Programs**

1. Create a basic drawing using Photoshop tools
2. Creating custom color, Image Transforming, cropping and Rotating
3. Convert color Photo into black and white photo
4. Background Color Foreground color Changes
5. Enhance and reduce the given Image size
6. Photo editing and drawing tools
7. Study of different Color modes and Color adjustment
8. Working with Layer system
9. Study of Pixel graphics
10. Combine aspects of Several images into one images
11. Add text to image
12. Create and use gradients
13. Create a cover page for any text book
14. Image editing using different types of Filters
15. Layout of Brochures.



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**Semester IV – Skill Enhancement - I**

**COMPUTER APPLICATIONS IN MS OFFICE**

Theory Hours : 1 Course Code : U204SET1 Practical Hours : - Credits :  
1 Exam Hours : 2 Marks : CIA ESE 15 45

**UNIT I**

Introduction to Word Basics : Introduction – What is word processing ? – Features and advantages of word processing – word basics – keyboard operations.

**UNIT II**

Tabs, Commands, Tool bars and their icons : The Ribbon – Tabs and Groups: File Tab – Home Tab – Insert Tab – Designing Tab – Page Layout Tab – Reference Tab – Mailing Tab – Review Tab – View Tab.

**UNIT III**

MS – Excel: Introduction – What is SpreadSheet? – Creating and Editing simple Wworksheets – Starting Excel – Navigating – Seecting Cells – Selecting Cells with the Mouse – Entering and editing text – Entering numbers – Entering formulae – Entering dates - Alignments.

**UNIT IV**

Menus, commands and tool bars – The ribbons – tabs and groups: File Tab – Home Tab – Insert Tab – Page Layout Tab – Formulas Tab – Data Tab – Review Tab – View Tab – Power Pivot Tab.

**UNIT V**

MS – Powerpoint: Introduction – Navigating in powerpoint – working with powerpointin different views.

**Text Books :**

1. A First Course in Computers based on Windows 8 and MS-Office 2013 by Sanjay



  
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Unit I & II – Chapter 4

Unit III & IV – Chapter 5

Unit V – Chapter 6

## Reference Book :

· Alex Leon, Mathew Leon, “Introduction to Computers”, Vikas Publishing, 2008. ·

Diane Koers, Microsoft Office XP- fast & easy” Prentice Hall of India Private Limited, New Delhi, 2001

## Semester - V – Skill Enhancement Course – III

### JOB INTERVIEW SKILLS

Theory Hours : 5

Course Code : U205SET3

Practical Hours : -

Credits : 4

Exam Hours : 3

Marks : CIA ESE 25 75

## UNIT I

Taking Stock of Things: Do your Skills match the job you want- Your job and your personality – SWOT analysis- Job Hunting and Background Search.

## UNIT II

Write perfectly to get the Right Job: Getting your basics Rights- Covering letters that sell- Preparing on APT Resume.


## UNIT III

How your interaction strategies: Get your Etiquette Right, Before the interview- During the interview- Voice and delivery- Right body language- Dressed.

## UNIT IV

Orienting yourself for Group Discussion: Group Discussion- The two sides of Group discussions- The structure of a group discussion- The importance of listening- Analytical skills Insight and creativity- Flexibility- Assertiveness.



  
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## UNIT V

Preparing for the Job Interviews: The interview process- Mindset- Your dress- Entering the interview room- Taking your seat- Answering questions- Asking questions.

### Text book:

Group discussion and interview skills, Priyadarshipatnaik.

### Semester VI – MBEC – III - Paper - II

## **CYBER SECURITY**

Theory Hours : 5  
Course Code : U20CS6EC3  
Practical Hours : -  
Credits : 4  
Exam Hours : 3  
Marks : CIA ESE 25 75

## UNIT I

Introduction : Cyber Security - Cyber Security policy – Domain of Cyber Security Policy – Laws and Regulations – Enterprise Policy – Technology Operations – Technology Configuration - Strategy Versus Policy - Cyber Security Evolution – Productivity – Internet – E commerce – Counter Measures – Challenges.


## UNIT II

Cyber Security Objectives and Guidance : Cyber Security Metrics – Security Management Goals – Counting Vulnerabilities – Security Frameworks – E-Commerce Systems – Industrial Control Systems – Personal Mobile Devices – Security Policy Objectives – Guidance for Decision Makers – Tone at the Top – Policy as a Project – Cyber Security Management – Arriving at Goals - Cyber Security Documentation – The Catalog Approach – Catalog Format – Cyber Security Policy Taxonomy.

## UNIT III

Cyber Security Policy Catalog : Cyber Governance Issues – Net Neutrality – Internet



  
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Names and Numbers – Copyright and Trademarks – Email and Messaging – Cyber User Issues – Malvertising Impersonation - Appropriate Use – Cyber Crime – Geolocation – Privacy – Cyber Conflict Issues – Intellectual property Theft – Cyber Espionage – Cyber Sabotage – Cyber Welfare.

## UNIT IV

Cyber Management Issues : Fiduciary Responsibility – Risk Management – Professional Certification – Supply Chain – Security Principles – Research and Development – Cyber Infrastructure Issue – Banking and finance – Health care – Industrial Control Systems.

## UNIT V

Case Study : A Government’s Approach to Cyber Security Policy.

### Text Book:

1. Jennifer L. Bayuk J, Heale P, Rohmeyer, Marcus Sachs, Jeffrey Schmidt and Joseph Weiss “Cyber Security Policy Guidebook”, John Wiley & Sons, 2012.

### Reference Books:

1. Rick Howard, “Cyber Security Essentials”, Auerbach Publications, 2011.
2. Richard A, Clarke, Robert Knake, “Cyber war: The Next Threat to National Security & What to Do About It”, Ecco, 2010.
3. Dan Shoemaker, “Cyber Security The Essential Body of Knowledge“, Cengage Learning, 2011.

## Semester VI – MBEC – III - Paper - III


### **SOCIAL COMPUTING**

Theory Hours : 5  
Course Code : U20CS6EC3  
Practical Hours : -  
Credits : 4  
Exam Hours : 3  
Marks : CIA ESE 25 75

## UNIT I

**Mining Twitter** : twitter in all the rage – Exploring Twitter’s API, Analzing the 140 characters. **Mining Facebook** : Exploring Facebook’s social Graph API – Analyzing social graph connections. **Mining web pages**: Scraping, Parsing and crawling the web.



  
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## UNIT II

**Analyzing the social web:** Nodes, Edges and Network Measures, Basics of network structure, Representing networks, Basic Network Structures and properties- Network Structure and Measures. Describing nodes and edges, Describing networks. Entity Resolution and Link Prediction.

## UNIT III

Community Maintained Resources, Supporting technologies for community maintained resources, User motivations- Location based social interaction, location technology, mobile location sharing- Social information Sharing and social filtering, Automated recommender system- Social media in the public sector, Analysing public sector social media.

## UNIT IV

**Random walks in social networks and their applications a survey:** Random walks on Graphs- Background- **Related work:** Algorithms, Applications, Evaluation and datasets. **A survey link prediction in social networks:** Feature based link prediction, Bayesian probabilistic models. **Privacy in social networks:** Privacy breaches in social networks.

## UNIT V

**Visualizing social networks:** A Taxonomy of visualizations- The convergence of Visualization, Integrating sensors and social networks- Multimedia information networks.

### Text book :

- 1) Matthew A. Russell, :Mining the Social Web; Data mining Facebook, Twitter, LinkedIn, Google+, Github, and More,” 2<sup>nd</sup> Edition, O’Reilly media, 2013. 2) Jennifer Golbeck, “ Analyzing the social web, “Morgan kaufmann, 2013. 3) Charu. Aggarwal(ed.), “Social Network Data Analytics, “Springer, 2011.

### Reference book :

- 1) Tina Yesayan, “Social Networking: A Guide to Strengthening Civil Society Through Social Media(SMGuide4CSO),” U.S Agency for international Development, 2014. 2) Subhasish Dasgupta, “Social Computing: Concepts, Methodologies, Tools, and Applications, : Information Science Reference, Hershey, New York, 2010. 3) Todd Kelsey, :Social Networking Spaces: From Facebook to Twitter and Everything in Between,” A press the experts voice, 2010.
- 4) Parongama Sen, Bikas K. Chakrabarti, “Sociophysics: An Introduction, “Oxford University press, 2014.
- 5) Liu, Huan, Salerno, John, Young, Michael.J.(Eds.), ”Social computing, Behavioral modeling, and prediction, “Springer, 2008.
- 6) Davina Rungen, “Web 2.0 and Social Computing,” Lambert Academic Publishing, 2011.





**Semester I – Skill Enhancement (Theory) – SEC - 1**

**DOCUMENT PREPARATION SYSTEM - LATEX**

Theory Hours : 2  
Course Code : P21CH1SE1  
Practical Hours : -  
Credits : 2  
Exam Hours : 2  
Marks : CIA ESE 25 75

**UNIT I**

Basic Structure of Latex 2e – Input file structure – Layout – Editors – Forward search – Inverse Search – Compiling - Conversion to various formats.

**UNIT II**

Typesetting simple documents – sectioning – Titles – page layout – listing – enumerating – quote letter formats.

**UNIT III**

Using package amsmath typing equations labeling and refreing.

**UNIT IV**

Figure inclusion – Table inclusion.


**UNIT V**

Bibliography – Index typing – Beamer presentation Styles.

**Text Book :**

1. Leslie Lamport, LATEX : A Document preparation System, Addison – Wesley, Reading, Massachusetts, second edition, 1994.



  
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KUMBAKONAM.



**Reference Books:**

1. Tobias Oetiker, Hubert Partl, Irenehyna and Elisabeth Schlegl., The (Not So) Short Introduction to LATEX2e, Samurai Media Limited (or available online at <http://mirrors.ctan.org/info/lshort/English/lshort.pdf>)

**Semester II – Skill Enhancement Course – II**

**DOCUMENT PREPARATION SYSTEM - LaTeX LAB**

Theory Hours : -  
Course Code : P21CS2SE2P  
Practical Hours : 2  
Credit : 1  
Exam Hours : 2  
Marks : CIA ESE 40 60

**List of Programs:**

1. Creating a LaTeX Document.
2. Mathematical Environments in LaTeX.
3. Table Creation in LaTeX.
4. Graphics in the LaTeX Document.
5. MS-Excel Chart in the LaTeX Document.
6. Landscape Figure in LaTeX Environment.
7. Thesis preparation using LaTeX Documents.

