Dr.Shyama Prasad Mukherjee University, Ranchi
Department of Information Technology

Semester	Honours (Core Courses)		Allied (Elective Courses)		Ability Enhanceme	
	Code	14 Papers	Code	8 Papers	Code	4 Papers
I	C1 C2	Computer Organization and Architecture + Pract Programming in C + Pract	GE1	**Refer Table No. AI-2.1** 04 Papers from Interdisciplinary		Compulsory Language Communicati
II	C3 C4	Data Structure with C + Pract Operating System + Pract	GE2		EVS	Environmental Science
III	C5 C6 C7	Programming in C++ and Pract Graph Theory + Pract Data Communication & Networking + Pract	GE3		SEC1	Soft Skills + Viva
IV	C8 C9 C10	Data base Management System+ Pract System Analysis and Design + Pract Management Information System+ Pract	GE4		SEC2	Organizational Behaviour + Viva
V	C11 C12	Programming in JAVA + Pract Web Technology + Pract	DSE1 DSE2	Object Oriented Modeling and Design +Pract E-Commerce and Application +Pract		
VI	C13 C14	Software Engineering + Pract Entrepreneurship Development +Pract	DSE3 DSE4	Data Mining and Warehousing + Pract Project + Viva		

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE : - C 1

COURSE TITLE : - **COMPUTER ORGANISATION AND ARCHITECTURE**

CREDIT : - **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34

This paper consists of 50 marks and divided into two groups:

Group-A: Objective questions (Compulsory)   :   1 x 10 = 10

Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Number System, Binary nos., Signed/Unsigned nos., 2's complement no's, Boolean algebra, De Morgan's Theorem,

Module 2: Simplification of Boolean Expressions, Karnaugh Map. Logic Gates, Truth Tables

Module 3: Combinational Logic Circuits & Realizations with Logic Gates- Half & Full Adders , Multiplexers, Demultiplexers, Encoders, Decoders.

Module 4: Sequential Circuits- JK, RS, T, D Flip Flop,

Module 5: Shift register, Synchronous and Asynchronous counters.

Module 6: Architecture of a simple Computer, Microprocessor, simple Architecture of 8085 & 8086, Registers and ALU, Instruction set,

Module 7: Addressing Modes, Timing diagram, DMA, Introduction of RISC And CISC

Module 8: Memory and Memory Organization, ROM, EPROM, SRAM, DRAM & Auxiliary Memory.

Books Recommended:

1. Computer system Architecture   – M. M. Mano
2. Digital electronics   – B.Ram.

PRACTICAL: Ms. Office

(a) Slide making & presenting using MS-Power Point
(b) Editing, mail merging, macros using MS-Word
(c) Spreadsheets, worksheets application using MS-Excel

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE :- **C2**
COURSE TITLE :- **PROGRAMMING IN C**
CREDIT :- **4**

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60
     The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Origin and Introduction
Programming languages About C, Evolution of C, Structure of a C Program, Compilers & Interpreters Compiling a C Program, A Simple C Program.

Module 2: Data Types, Variables and Constants Data Types Variables, Constants Operators, Type Modifiers and Expressions Operators, Type Modifiers Expressions, Introduction to Input/output Console I/O Functions, Unformatted Console I/O Functions.

Module 3: Control Constructs Control Statements, Conditional Statements, Loops in C, The break Statement, The Continue Statement.

Module 4: Arrays and String Introduction to Arrays, One Dimensional & Two Dimensional Arrays. Introduction to strings

Module 5: Functions Introduction to Functions, Function Declaration and Prototypes, Recursion in Function.

Module 6: Pointers Introduction to Pointers, Pointer Notation. Pointer Declaration and Initialization, Accessing Variable through Pointer, Pointer Expressions, Pointers and One Dimensional Arrays.

Module 7: Structures Structure Definition, Structure Initialization, Arrays of Structures, Arrays within Structures. Structures within Structures, Passing Structures to Functions

Module 8: File Handling in C What is a File, Defining and Opening a File, Functions for Random Access to Files.

Reference Books:
1. Programming in C By Stephen G. Kochan
2. Programming in C ByM.T.Somashekara

PRACTICAL: - C Programming
Basic program of C (a) Control Statement, (b) Arrays(c) String, (d) Structure (e) Pointers

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE **:-** **C 3**
COURSE TITLE **:-** **DATA STRUCTURE WITH C**
CREDIT **:-** **4**

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60
        The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module1: INTRODUCTION TO DATA STRUCTURES

Basic Concepts, Algorithms, Notations, Data Structure operations. Implementations of Data Structures, Mathematical Notations, Functions.

Module2: ARRAYSInsertion and deletion of element from an Array, Static Memory Allocation, searching

Module 3: STACK And Queue Implementation of Stack, Array-based Implementation.Applicationsof Stack.EvaluatingPostfix Expression, Simulating Recursive Function using Stack.

Module 4:QUEUE Queue Implementation, Array-based Implementation.

Module 5: LINKED LISTS Dynamic Allocation of Memory, Representation of Linked List. Implementation of Single Linked List, Insertion, deletion and traversing through single linked list. Implementation of Doubly Linked Lists, Insertion,deletion and traversing through Double linked list

Module 6: TREES Introduction to Trees, Binary Tree, Implementation of Binary tree, Binary Tree Traversal. Searching a Binary Tree,

Module 7: Binary search tree, Insertion, deletion and traversing through BST, Introduction to Threaded Binary Trees, AVL Tree.

Module 8: Searching and Sorting Linear or Sequential Search, Binary Search. Bubble sort, Selection sort, Insertion sort, Quick sort, Simple Merge sort, heap sort.

Books Recommended:
Data Structures – Lipschutz.
Data Structures through C-Y.P. Kanetkar.
Data Structure – Samanta

PRACTICAL: Data Structure with C
Data structure programming implementation covering entire syllabus

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE   **:-**   **C 4**
COURSE TITLE   **:-**   **OPERATING SYSTEM**
CREDIT   **:-**   **4**
Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60
      The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Concept of Operating System: Simple batch systems, multiprogrammed batch systems, time-sharing systems, parallel systems, distributed systems, real-time systems.

Module 2: Computer System structure: Computer System Operation, I/O structures storage structure, storage hierarchy and hardware protection.

Module 3: Operating System structure: System components, system services, system calls, system programs, and system structure- simple structure.
Process concept: process state, process control blocks, process scheduling and schedulers

Module 4: CPU scheduling: CPU-I/O burst cycle, scheduling criteria, scheduling algorithms (Non pre-emptive-FCFS, SJFS, Pre-emptive-SJFS, and RR).

Module 5: Memory management: contiguous allocation, Paging, Swapping, And Segmentation. Virtual memory- Demand paging, page replacement, page replacement algorithms (FIFO, LRU).

Module 6: File system structures- file allocation (contiguous, linked, and indexed), free space management (bit vector, linked list, grouping, counting).

 Module 7: Disk structure- Disk scheduling (FCFS, SSTF, SCAN)
 Module 8: Security- The problem, authentication, and program- threats, encryption.

      Books Recommended:
      Operating System: Peter Gelvin
                           God boleDhamdhare

PRACTICAL: MS.DOS
 Basic of DOS commands, Internal Commands, External Commands and   Batch Creation etc

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE **:-** **C 5**
COURSE TITLE **:-** **PROGRAMMING IN C++**
CREDIT **:-** **4**

Marks distribution

Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34

This paper consists of 50 marks and divided into two groups:

Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: OOPS**:** Concepts of OOPS and differences with procedural languages, characteristics of OOPS (Idea of objects, class, data abstraction & encapsulation, inheritance, polymorphism, dynamic binding, I/0 stream, Cin, Cout, I/O manipulation).

Module2: Data Types, operators, Control structure & looping statements, Functions and arrays.

Module 3: Objects & classes: classes and objects, constructor, destructor

Module 4: Operators overloading**:** unary operator (++, --,-) binary operators using member function and friend function

Module 5: Inheritance: Derived class and base class, protected access specifier, derived class constructors, class hierarchies, abstract base class, public and private inheritance, Multiple inheritance, containership (classes within classes).

Module 6: Pointers: Address and pointers, pointers and arrays, memory management. "New" & "delete" pointer to objects, pointer to pointer and "this" pointer

Module 7: Functions: Virtual functions, Friend functions, static functions.

Module 8: Files and streams: String, string I/O, object I/O, I/O with multiple objects file pointer

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Books Recommended:

I. C++ -Lafore
2. C++ -Balaguruswamy
3. C ++ -Kanetkar

PRACTICAL: Programmining in C++

  Programming Using C++ based on functions, constructor, destructor, operator overloading, inheritance, polymorphism, Pointer

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE **:-** **C 6**
COURSE TITLE **:-** **GRAPH THEORY**
CREDIT **:-** **4**

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60
The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module-1 Introduction: What are Graph, Application of Graphs, Finite and Infinite Graphs, Incidence and Degree, Isolated Vertex, Pendant Vertex and Null Graph?

Module-2 PATHS AND CIRCUITS**:** Isomorphism, Sub graphs, Walks, Paths and Circuits, Connected Graphs, Disconnected Graphs and Components,

Module-3 Euler Graphs, Operations on Graphs, Hamiltonian Paths and Circuits, The Travelling Salesman Problem.

Module-4TREES AND FUNDAMENTAL CIRCUITS**:** Trees, Some Properties of Trees, Pendent Vertices in a Tree, Distance and Centers in a Tree, Spanning Trees, Fundamental Circuits,
Finding all Spanning Trees of a Graph, Spanning Trees in a Weighted Graph.

Module-5CUT-SETS ANDCUT VERTICES**:** Cut Sets, Some Properties of a Cut-Set, All Cut Sets in a Graph, Fundamental Circuits and Cut-Sets,

Module-6 Connectivity and Separability, Network Flows, I-Isompiphism, 2-Isomorphism. (Statements and applications of Theorems only, no proofs).

Books Recommended:

Graph Theory: NursingDev

PRACICAL:- JOB Training-I

One Month On-Job Training in Latest Technology

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE :- C 7
COURSE TITLE :- DATA COMMUNICATION AND NETWORKING
CREDIT :- 4

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60

   The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module1: Basic network concepts, advantages and disadvantages of computer networks, types of networks-LAN, WAN, MAN LAN Technology**:** LAN architecture, Bus/Tree LAN, Ring & Star LANs Network topologies, Hardware requirement of a network, Network operating system.

Module 2: A communication model, communication tasks, three-layer approach to protocols, brief introduction to TCP/IP and OSI (brief function to different layers),
Module 3: Data Transmission: concept and terminology, analog and digital data transmission. Transmission impairments, Guided transmission media. Data encoding, digital data digital signal, digital data analog signal, analog data digital signal and analog data analog signal

Module 4: Data link control**:** flow control, error detection (CRC). Error control, High level data control (HDLC). Multiplexing.
Module 5: Circuit switching: switched network, circuit switching networks, switching concepts, Packet Switching: packet switching principals, congestion and control
Module 6: Ethernet:-Standard Ethernet and Fast Ethernet, CSMA, CSMA/CD, CSMA/CA, Token ring and FDDI.
Module 7: Bridges: Bridge operation, routing and bridges
Module 8: Network Security: Requirements, conventional encryption, public key encryption & digital signature. (No numerical related questions are to be asked

Books Recommended:

Data Communication and Networking: Tannenbaum
Data Communication and Networking: W. Stalling
Data Communication and Networking: Frozen

PRACTICAL: PERSONAL COMPUTER CONFIGURTION

   Installation of operating system, introduction of hardware.

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE :- **SEC-I**
COURSE TITLE :- **Soft Skills**
CREDIT :- **2**

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module- I - SELF ANALYS IS SWOT Analysis, Who am I, Attributes, Importance of Self Confidence, Self Esteem.

Module-2 - CREATIVITY Out of box thinking, Lateral Thinking.

Module-3- ATTITUDE Factors influencing Attitude, Challenges and lessons from Attitude, Etiquette.

Module-4- MOTIVATION Factors of motivation, Self talk, Intrinsic & Extrinsic Motivators.

Module-5- GOAL SETTING Wish List, SMART Goals, Blue print for success, Short Term, Long Term, Life Time Goals. Time Management Value of time, Diagnosing Time Management, Weekly Planner to do list, Prioritizing work. Extempore ASSESSMENT

Module-6- INTERPERSONAL SKILLS Gratitude Understanding the relationship between Leadership Networking & Team work. Assessing Interpersonal Skills Situation description of Interpersonal Skill. Team Work: Necessity of Team Work Personally, Socially and Educationally

Module-7 - LEADERSHIP Skills for a good Leader, Assessment of Leadership Skills

Module-8 - STRESS MANAGEMENT Causes of Stress and its impact, how to manage & distress, Circle of control, Stress Busters. Emotional Intelligence what is Emotional Intelligence, emotional quotient why Emotional Intelligence matters, Emotion Scales. Managing Emotions.

TEXT BOOK: SOFT SKILLS, 2015, Career Development Centre, Green Pearl Publications.

PRACTICAL: SOFT SKILLS

Personality development

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE :- **C 8**
COURSE TITLE :- **DATA BASE MANAGEMENT SYSTEM**
CREDIT :- **4**

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module1: Introduction to DBMS- Purpose, difference with respect to conventional file processing system, data abstraction, data independence, data models(object-based, record based, physical data models), database manager, database administrator, overall system structure.

Module 2: Entity- Relationship model- Relationship sets, Mapping, keys and entity sets. Entity Relationship diagram, specialization, generalization and aggregation.

Module 3: Relational algebra- Project, select, Cartesian product, joins, natural join, union, intersection.

Module 4: Normalization-Functional dependency, INF, 2NF, 3NF, BCNF, multivalued dependency &4NF. Lossless joins dependency preservation.

Module 5: Transaction- concepts, transaction state, concurrent executions, serializability, conflict serializability, view serializability.

Module 6: Concurrency control- locks, granting of locks, timestamp based protocols, deadlock prevention, detection & recovery
Module 7: Security- Authorization.

ORACLE:
Module 8: Oracle: - Oracle functions, SQL, simple queries, nested sub-queries, self join, equijoin, non-equijoin, PL/SQL programming (Writing small blocks for data Manipulation). Update, Insert, Triggers

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Books Recommended:
1. DBMS -Korth
2. DBMS -C.J. Date
3. Oracle –Byross

PRACTICAL: ORACLE

Writing and executing simple and complex queries, Creation and alteration of tables updating Inserting, deleting a table. Writing simple PL/SQL codes for data manipulation

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE   **:-**   **C 9**
COURSE TITLE   **:-**   **SYSTEM ANALYSIS AND DESIGN**
CREDIT   **:-**   **4**

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60
The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Overview of System Analysis & Design, System Development life cycle, Project selection-sources of project requests, preliminary investigation.

Module 2: Feasibility study-Economic feasibility, cost and benefits analysis, feasibility consideration steps in feasibility analysis, feasibility reports

Module 3: Testing, System testing, unit and integration testing, test plans. Software selection criteria.

Module 4: System Design –process and stages, I/O and form design, File Organization and database design

Module5- CPM, PERT, Fact finding techniques, Data flow diagrams, Data dictionaries

Module 6:- Security, Disaster recovery and ethics are system development.

Module 7:- Process of design, logical and physical design, structure design, and structure walk through input design output design, form design, classification of form, and requirement of form.

Book Recommended

1. System analysis & design-E.M. Awad
2. V.Raja Raman

PRACTICAL: LINUX OPERATING

Basics of Linux Operating system, Commands

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE   **:-**   **C 10**
COURSE TITLE   **:-**   **MANAGEMENT INFORMATION SYSTEM**
CREDIT   **:-**   **4**

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Overview of MIS,Significance of MIS,explain management ,information and system, nature,scope characteristics of MIS,Comparing information IT with MIS

Module 2: Structure of MIS on the basis of physical components,support for decision making,classification of MIS-(Transaction processing system, management information system decision support system,office automation system)

Module:3 Functional Information System-financial information system, marketing information system,production/manufacturing information system

Module :4 Decision Making Type-purpose of decision making ,simon's model of decision-making Decision tree

Module:5 Information and system concepts-types of information-stategicinformation,operationalinformation,definition of system,element of system-input,process,output,feedback

Module :6 System development approaches-Spiral model, water fall model

Module 7: System analysis-introduction to system analysis, determination of requirements,identitify the data used and information evalution of mis- evalution approaches ,evalution classes,product based misevalution,cost/benefit based evalution.

Module 8: Information System Planning-Planning terminology ,mission,objectives,strategies ,policiesLocation of mis in the structure of organization.

Books Recommended: Management Information System – Javedkar

PRACTICAL:- JOB Training-II

1. One Month On-Job Training in Latest Trends (IT market demands)

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE   :-   SEC-II
COURSE TITLE   :-   **Organizational Behaviour**

CREDIT   :-   **2**

Marks distribution
Full Marks: 15 (MSE) + 60 (ESE) = 75   Duration: 3 hrs   Pass Marks: 34
This paper consists of 50 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: descriptive questions (5 out of 8 questions)   :   10 x 5 = 50

Total =   60
          The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module-1 Introduction: Meaning and importance of the study of OB

Module-2 Behaviour and its causation: Introduction to personality, perception, learning andattitude

Module-3 Motivation: Importance of psychological process of motivation, salient motivation toolsNeed Theories/ Content Theories (Maslow's Hierarchy of Needs, Alderfer's ERG Theory Process Theories (Herzberg's Two Factor Theory and Vroom's Expectancy Theory)

Module-4 Leadership and Group Dynamics: Historically Important(Ohio State and Michiganleadership Theories), Traditional Theories (Trait Theory and Contingency Theory)
Modern Theories (Charismatic Theories), Formal and informal groups, role concept

Module-5 Improving Interpersonal Effectiveness: Interpersonal communication, Introduction toTA

Module-6 Conflict Management and Team Building: Sources of Conflict, Types of Conflict,Negotiation (process and issues)

Module-7 Concepts of Organizational Culture and Organizational Development: Definition, Organizational Culture

Module-8 Organizational Development: Concept of OD, Phases of OD and OD Interventions,Limitations of OD Interventions Concept of Morale and Job Satisfaction

Text Books:
  1. Pareek, U. Understanding Organizational Behaviour (Oxford University Press: New Delhi)
  2. Robbins, S.P.&Sanghi Organizational Behaviour (Prentice Hall India: New Delhi)

PRACTICAL: Organizational Behavior

          Organizational Behavior**,** Leadership & Group Discussion and Organizational Development

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE :- C 11
COURSE TITLE :- **PROGRAMMING IN JAVA**
CREDIT :- **4**

Marks distribution
Full Marks: 20 (MSE) + 80 (ESE) = 100 Times: 3 hrs   Pass Marks: 45
This paper consists of 70 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: Descriptive questions (6 out of 9 questions)   :   7 x 10 = 70
Total =   80
The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Introduction to Java: History of Java, features of Java, types of Java programs.   JDK Tools: Javac compiler, Java interpreter, applet viewer, Java tools, Javap disassemble, Javadoc Tool, JavahTool,Java keywords,

Module 2: Data types in Java, Variable naming conventions, Initializing variables, literals, operators, type conversion, construct, looping construct, Arrays and vectors.

Module 3: Classes and objects: Declaring classes, creating objects, declaring objects, declaring methods, passing arguments to methods,

Module 4: Constructors, access specifies (public, private, protected, Default), modifiers, the Method Overloading, Method Overriding, Garbage collection (Introduction).

Module 5: Inheritance: Introduction to Inheritance, Types of Inheritance Abstract class and Interface

Module 6: Introduction to threads: Threads, Single threaded and multithreaded applications, life cycle of a Thread, the current thread, the thread class, Problems in multithreading.

Module 7: Packages: Java packages, using a package, the Lang packages, the package, the creating a package.

Module 8: Applets & Applications: Applet class, Applet & HTML, Life cycle of an Applet, Graphic class (Introduction), passing parameters to Applets, Creating an application

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Books Recommended:
1. Java- Complete Reference
2. Mastering Java

PRACTICAL: Programming in JAVA

Entire syllabus of java Programming

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE   :-   C 12
COURSE TITLE   :-   **Web Technology and Design**
CREDIT   :-   **4**

Marks distribution
Full Marks: 20 (MSE) + 80 (ESE) = 100 Times: 3 hrs   Pass Marks: 45
This paper consists of 70 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: Descriptive questions (6 out of 9 questions)   :   7 x 10 = 70
Total =   80
The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: History of the Internet and World Wide Web, Search Engines, News-group, E-mail and its Protocols, Web Portal, Browsers and their versions, Its functions, URLs, web sites

Module 2: Static Web Development: HTML - Introduction to HTML, HTML Document structure tags,HTML comments, Text formatting, inserting special characters, anchor tag, adding images and Sound, lists types of lists, tables, frames and Developing Forms

Module 3: Introduction to Java Script: Data Types, Control Statements, operators, Functions, Objects in Java Script, Handling Events.

Module 4: Cascading Style Sheet: Types of Style Sheets – Internal, inline and External style sheets, creating styles, link tag.

Module 5: DHTML: Introduction to DHTML, JavaScript &DHTML, Document Object Model, DHTML Events, Dynamically change style to HTML Documents.

Module 6: Overview to ASP, features of asp, client side scripting vs server side scripting, web server, configuration of IIS in xp windows, creation of virtual directory.

Module 7: Asp objects and their characteristics- Request, response, server, session, application, form method-get, post,

Module 8: introduction of ado , ado work, oledb, odbc, connection object, recordset object

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Books Recommended:

1. HTML DHTML Java Script VB Script – Ivan Bayross
2. Black Book : Holzner

PRACTICAL: WEB TECHNOLOGY
Program of Web Technology covering entire syllabus, creating web page

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE   :-   **DSE 1**
COURSE TITLE   :-   **DSE-I/OBJECT ORIENTED MODELING AND DESIGN**
CREDIT   :-   **4**

Marks distribution
Full Marks: 20 (MSE) + 80 (ESE) = 100 Times: 3 hrs   Pass Marks: 45
This paper consists of 70 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: Descriptive questions (6 out of 9 questions)   :   7 x 10 = 70
Total =   80
The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1:   **Introduction:** What Is Object-Oriented? What Is Object Oriented Development? Object Oriented Theme.

Module 2:   **Modeling as a Design Technique:** Modeling, Abstraction, The three models.

Module 3:   **Class Modeling:** Object and class concepts, link and association concepts, Generalization and inheritance, a sample class model. **Advanced class Modeling:** Aggregation, abstract classes, multiple inheritances, metadata, and constraints.

Module 4:   **State Modeling:** Events, states, state diagrams. **Advanced states Modeling:** Nested state diagrams, nested states, concurrency, a sample state model.

Module 5:   **Interaction Modeling**: Use case models, sequence models, activity models, Data Flow Diagrams

Module 6:   **Process Overview:** Development states, Development life cycle.

Module 7:   **System Design:** Overview of system design, breaking a system into subsystems, indentify concurrency, allocation of subsystems, management of data storage, handling global resources, choosing a software control strategy, handling boundary conditions, setting trade-off priorities, common Architectural styles, architecture of the ATM system.

Module 8:   **Programming style:** Object-Oriented Style, Reusability, Extensibility, Robustness, Programming – in-the-Large.

Text Book:
Michael R Blaha and James R Rumbaugh– Object Oriented Modeling and Design, PHI, New Delhi, 2003

PRACTICAL: UML

Object Oriented with UML, Class diagram, Object Diagram, Activity Diagram, State Diagram

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE :- **DSE 2**
COURSE TITLE :- **DSE-II/E-COMMERCE AND APPLICATION**
CREDIT :- **4**
Marks distribution
Full Marks: 20 (MSE) + 80 (ESE) = 100 Times: 3 hrs   Pass Marks: 45
This paper consists of 70 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: Descriptive questions (6 out of 9 questions)   :   7 x 10 = 70
Total =   80
The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Introduction to e-commerce, Advantages and Disadvantage of Ecommerce, Types of E-Commerce EDI-electronic data interchange, Benefits of EDI, Component of EDI System.

Module 2: Introduction to UN/EDIF ACT standard, An EDIFACT Message, Interchange Structure, Un/EDIFACT message Directories.

Module 3: Internet & Extranets, Commerce over the Internet, Commerce over the Extranet Identification & tracking tools, EAN system, Eancom, Article numbering, bar Coding.

Module 4: Business process Re-engineering, Strategic Alignment Model BPR Methodology. Rapid Re Methodology, Management of change

Module 5: Concerns for e-commerce growth – Legal issues, Risks, Technology for Authenticating Electronics Document, Laws for E-Commerce, Legal issues for internet commerce.

Module 6: Cyber security, Cyber attacks, Hacking, Firewalls, cryptography based solutions, Digital Signature

Module 7: Cyber crimes, Information Technology act 2000, Public Key Infrastructure, PKI and Certifying Authorities

Module 8: Electronic payment system, Payment gateway and Internet banking, Pay pal, Secure Electronic |Transaction (SET) protocol

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Books Recommended :

1.K. K. Bajaj & D. Nag **–** TMH
2.Rayport & Jawors

PRACTICAL: E-COMMERCE AND APPLICATION

CASE STUDY ON E-COOMERCE, APPLICATION OF E-COMMERCE,E-GOVERNANCES CASE STUDIES

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE :- C 13
COURSE TITLE :- SOFTWARE ENGINEERING
CREDIT :- 4

Marks distribution
Full Marks: 20 (MSE) + 80 (ESE) = 100 Times: 3 hrs   Pass Marks: 45
This paper consists of 70 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: Descriptive questions (6 out of 9 questions)   :   7 x 10 = 70
Total =   80
The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Software : Characteristics, Components and Applications, Software process, Software Engineering –
A layered Technology, The software process, Software Process models, Linear Sequential Model, Prototyping
Model, RAD Model and Evolutionary Software Models.

Module 2: Software Process & Project Metrics: Metrics in Project & Process Domains, Software Measurement
and Metrics for Software Quality,

Module 3: Project Planning Objectives: Software Scope, resources, Software Project Estimation,
Decomposition Techniques, Empirical estimation Models, Make-Buy decision.

Module 4: Risk Management: Software risks, Risk Identification, Projection, Defining Task set for software
Project, selecting software engineering tasks, scheduling and project plan,

Module 5: Software Quality Assurance. Software reviews, Formal approach to SQA Software Reliability, The
SQA plan.

Module 6: Conventional Methods for Software Engg : System Engg. Product Engg., Modeling the System,
Architecture, System specifications, Analysis Concepts & Principles, Software prototyping, Specifications,
Analysis Modeling, Design Concepts, Principles & Methods, Design for real-time system, Software Testing
Methods.

Module 7: Object Oriented Software Engineering, Object Oriented Analysis, Object Oriented Design &
Testing.

Module 8: Advanced Topics in Software Engg : Software Reuse, Reengineering, Client/Server Software Engg
and Computer Aided Software Engg

Books Recommended:
1.   Roger S. Pressman – Software Engineering – A Practitioner's Approach – McGraw Hill.
2.   Richard Fairley – Software Engineering Concepts, TATA McGraw Hill.
3.   Pankaj Jalote – An Integrated Approach to Software Engineering – Narosa.

PRACTICAL: SOFTWARE ENGINEERING
SOFTWARE REQUIREMENT SPECIFICATION (SRS) OF ANY ORGANIZATION.

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE :- **C 14**
COURSE TITLE :- **ENTERPRENEURSHIP DEVELOPMENT**
CREDIT :- **4**
Marks distribution
Full Marks: 20 (MSE) + 80 (ESE) = 100 Times: 3 hrs   Pass Marks: 45
This paper consists of 70 marks and divided into two groups:
Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: Descriptive questions (6 out of 9 questions)   :   7 x 10 = 70
Total =   80
The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Need, scope and characteristics of Entrepreneurship, special schemes for Technical Entrepreneurs, STED. Identification of opportunity**.** Exposure to demand based, resource based, service based, import substitute and export promotion Industries.

Module2: Market survey Techniques. Need scope and approaches for project formulation. Criteria for Principles of Product selection and development. Structure of project report.

Module3: Choice of technology, plant and equipment.   Institutions, financing procedure and financial incentives. Financial ratio and their significance.

Module4: Books of accounts, financial statements and funds flow analysis**.** Energy requirement and Utilization. Resource Management Men, Machine and Materials.

Module5: Critical Path Method [CPM] and Project Evaluation Review Techniques [PERT] as planning tools for establishing SSI.   a] Creativity and innovation. b] Strength weakness Opportunity and Threat [SWOT] Techniques**.**

Module6: Techno – economic feasibility of the project.   Plant layout and Process Planning for the product. Quality control/quality assurance and testing of product.

Module7: Elements of Marketing and Sales management. a] Nature of product and market strategy   b] Packaging and advertising. c] After Sales service. Costing and Pricing.

Module8: Management of self and understanding human behavior. Sickness in small scale industries and their remedial measures**.** Copying with uncertainties, stress management and positive reinforcement.
a] Licensing , registration. b] Municipal bye laws and insurance coverage. Important provisions of factory Act, Sales of Goods Act, Partnership Act. a] Dilution control   b] Social responsibility and business ethics.
Income Tax, Sales Tax and Excise Rules.

Books Recommended:
Entrepreneurship Development: S.B. Khanka, EDP – Khanka and Gupta
EDP – Khanka and Gupta

  PRACTICAL: EDP
  1. Conduct of mini market survey, Data collection through questionnaire and personal visits.
  2. Analysis of simple project reports, communication written and oral practices

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE **:-** **DSE 3**
COURSE TITLE **:-** **DSE-III/DATA WAREHOUSE AND DATA MINING APPLICATION**
CREDIT **:-** **4**

Marks distribution

Full Marks: 20 (MSE) + 80 (ESE) = 100 Times: 3 hrs   Pass Marks: 45

This paper consists of 70 marks and divided into two groups:

Group-A: Objective questions (Compulsory)   :   1 x 10 = 10
Group-B: Descriptive questions (6 out of 9 questions)   :   7 x 10 = 70
Total =   80

The questions must cover the entire syllabus with equal distribution of marks as far as practicable.

Module 1: Overview and Concepts of Data Warehousing Overview of Data warehousing Strategic information and the need for Data warehousing, Defining a Data warehouse, Evolution of Data warehousing, Data warehousing and Business Intelligence The Building Blocks of Data warehouse

Module 2: Defining features - Subject-oriented data, Integrated data, Time-variant data, Nonvolatile data, Data granularity Data warehouses and Data marts Architectural Types - Centralized, Independent data marts, Hub-and-Spoke,

Module 3: Data Staging, Data Storage, Information Delivery, Metadata, and Management and Control components Business Requirements and Data warehouse Requirement Gathering methods and Requirements Definition Document (contents) Business Requirements and Data Design - Structure for Business Dimensions and Key Measurements,

Module 4 : Data warehouse Architecture and Infrastructure Architectural components Concepts of Data warehouse architecture - Definition and architecture in the areas of Data acquisition, Data storage, and Information delivery Distinguishing characteristics

Module 5: Data Mining Overview of Data mining - Definition, Knowledge Discovery Process (Relationships, Patterns, Phases of the process).

Module 6: OLAP versus Data mining Some aspects of Data mining - Association rules, Outlier analysis, Predictive analytics etc) Concepts of Data mining in a Data warehouse environment

Module 7: Data Mining Classifiers- K-NN, SVM, Navie bayes(In brief introduction for Practical approaches)

Books Recommended:

1. Data Warehousing Fundamentals for IT Professionals, Second Edition by Paulraj Ponniah, Wiley

2. Data Warehousing, Data Mining, & OLAP - Second Edition by Alex Berson and Stephen J. Smith, Tata McGraw Hill Education

PRACTICAL: DATA WARE HOUSING AND MINING

Statistical analysis with different types of data's

(DEPARTMENT OF INFORMATION TECHNOLOGY)

COURSE CODE   :-   DSE 4
COURSE TITLE   :-   DSE-IV PROJECT
CREDIT   :-   12

(A) DEVELOPMENT OF SOFTWARE

(B) TRAINING LATEST TECHNOLOGY