



**UTTARAKHAND BOARD OF TECHNICAL EDUCATION**  
**JOINT ENTRANCE EXAMINATION AND TRAINING, RESEARCH DEVELOPMENT CELL, DEHRADUN**  
**STUDY AND EVALUATION SCHEME FOR DIPLOMA PROGRAMME**

**BRANCH NAME– COMPUTER SCIENCE AND ENGINEERING**

**SEMESTER – V**

Subject Code	Subject	L	T	P	T O T	EVALUATION SCHEME						Total Marks	Credit Point
						Internal		External					
		Theory		Practical		Theory		Practical					
		Max Marks	Max Marks	Max Marks	Hrs.	Max Marks	Hrs.						
Period/Weeks													
055002	Software Engineering	5	-	-	5	30	-	70	2.5	-	-	100	5
055004	Android Application Development	5	-	4	9	30	30	70	2.5	60	3.0	190	6
055001	Java Programming	5	-	4	9	30	30	70	2.5	60	3.0	190	6
055003	Computer Hardware and Servicing	5	-	4	9	30	30	70	2.5	60	3.0	190	6
055005	Minor Project Work	-	-	12	12	-	50	-	-	150	3.0	200	7
055052	Industrial Exposure (Assessment at Inst. Level) +	-	-	-	-	-	25	-	-	-	-	25	2
055053	Industrial Training	-	-	-	-	-	30	-	-	50	3.0	80	2
015054	General Proficiency #	-	-	4	4	-	25	-	-	-	-	25	1
<b>Total</b>		<b>20</b>	<b>-</b>	<b>28</b>	<b>48</b>	<b>120</b>	<b>220</b>	<b>280</b>	<b>-</b>	<b>380</b>	<b>-</b>	<b>1000</b>	<b>35</b>

\*\* Common with diploma programme in Chemical Technology (Paint) and Chemical Technology (Rubber & Plastic).

# General Proficiency will comprise of various Co-curricular activities like games, hobby clubs, seminars, declamation contests, extension lectures, field visits, NCC, NSS and cultural activities, G.K., general study, elementary math and discipline.

++ Industrial visit compulsory at minimum two industries or departments.

**Note- 1- Each period will be of 50 minutes. 2- Session will be of 16 weeks. 3- Effective teaching will be of at least 12.5 weeks.**

**Branch Code - 05**



**FIFTH SEMESTER  
COMPUTER SCIENCE AND ENGINEERING**





Subject Code : 055002

L	T	P
5	-	-

**RATIONALE**

Software Engineering deals with reliability and quality assurance of the software under development. It provides framework for development of quality software product. The course enables the students to write specifications for software system understand the importance of good software, design and develop test plans from design specifications. The course also covers other important aspects of software Engineering such as software life cycle, requirement analysis and documentation, characteristics of good design, design techniques, testing, software implementation and maintenance etc.

**OBJECTIVES**

On completion subject, the students must be able to

- Define Software Engineering.
- Understand the characteristics of Software Engineering.
- Explain different software development models.
- Learn about the phases of software development cycle.
- Understand the significance of requirement analysis.
- Know various tools and techniques used for requirement analysis.
- Understand the different types of project metrics.
- Understand different software estimation techniques.
- Explain about software maintenance.
- Need for software maintenance.
- Identify and manage risks.
- Describe testing and types of testing used in software engg. like black box and white box testing.
- Understand the concepts of Software quality and quality assurance.

**DETAILED CONTENTS****1. Introduction To Software Engineering:****(15 Periods)**

Basics of Software Engineering : Need for Software Engineering – Definition– Software Characteristics – Software Myths – Program versus Software Products, Software Development Life Cycle Models: Introduction–Waterfall Model – Prototyping model – Spiral Model – Iterative

Enhancement model - RAD model- Object Oriented Model - Advantages and Disadvantages of above models – Comparison of various models., Software Requirement Analysis ( SRS) : Value of good SRS – Requirement Process – Requirement Specification – Desirable characteristics of an SRS– Components of an SRS – Structures of a requirements documents - Problems in SRS – Requirements gathering

**2. Software Design and Planning : (20 Periods)**

Software Design : Definition of software design – Objectives of software design – Process of software design – Architectural design – Modular design – Structure chart – Coupling and Cohesion – Different types–Interface design – Design of Human Computer Interface , Software Planning: Software metrics - Definition – Types of metrics – Product and Project metrics – Function point and feature point metrics – Software project estimation –Steps for estimation – Reason for poor and inaccurate estimation – Project estimation guidelines – Models for estimation – COCOMO Model .

**3. Software Maintenance and Risk Management : (15 Periods)**

Software Maintenance: Software as an evolution entity – Software configuration management activities – Change control process –Software version control – Software configuration management – Need for maintenance–Categories of maintenance– Maintenance cost – Factors affecting the effort, Risk management: Definition of risk – Basics for different types of software risks – Monitoring of risks – Risk management – Risk avoidance – Risk detection

**4. Software Quality Assurance: (15 Periods)**

Software Quality Assurance : Verification and validation – SQA - Objectives and Goals – SQA plan - Definition of software quality – Classification of software qualities - Software quality attributes – Important qualities of software products - Importance of software quality – SEI – CMM - Five levels -ISO 9000 – Need for ISO Certification – Benefits of ISO 9000 certification – Limitation of ISO 9000 certification – Uses of ISO - Salient features of ISO 9000 Requirements – Introduction to ISO9126, Software Reliability : Definition – Reliability terminologies , Reliability measurement process

**5. Software Testing: (15 Periods)**

Software Testing : Introduction to testing – Testing principles – Testing

objectives – Test Oracles - Basic terms used in testing – Fault – Error – Failure - Test cases – Black box and white box testing – Advantages and disadvantages of above testing – Methods for Block box testing strategies – Methods for white box testing strategies. ,Unit testing - Integration tests – System testing Software Testing strategies: Static testing strategies – Formal technical reviews – Code

## REFERENCE BOOK

1. Software Engineering, Ian Sommerville Pearson Education Sixth Edition
2. Fundamentals of Software Engineering Rajib Mall PHI Learning Pvt Limited, New Delhi 28th Printing – August 2011
3. Software Engineering, Bharat Bhusan Agarwal, Sumit Prakash Tayal Firewall Media, New Delhi Second Edition 2008
4. Software Testing, K. Mustafa and R. A. Khan Narosa Publishing House, New Delhi Reprint 2009
5. Software Quality, R. A. Khan, K. Mustafa and SI Narosa Publishing House, New Delhi Reprint 2008

## SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Period)	Marks Allocation
1	15	15
2	20	20
3	15	10
4	15	10
5	15	15
<b>Total</b>	<b>80</b>	<b>70</b>

# ANDROID APPLICATION DEVELOPMENT

Subject Code : 055004

L	T	P
5	-	4

## RATIONALE

Android Application Development provides you maximum customization feature. Since Android is an open-source platform, it provides a supreme customization feature for Android Application Development and this is the reason that Android Application Development is very popular.

## DETAILED CONTENTS

### 1. Explain the concept of Open source mobile technology : (16 Periods)

Mobile technology: Overview of Android - An Open Platform for Mobile development, Open Handset Alliance, Use Android for mobile app development, Android Marketplaces, Android Development Environment setup, Android development Framework - Android-SDK, Eclipse Emulators / Android AVD, Creating & setting up custom Android emulator, Android Project Framework and its applications.

### 2. Describe Android architecture framework: (10 Periods)

- 2.1 Linux Kernel
- 2.2 Libraries
- 2.3 Android Runtime
- 2.4 Application Framework
- 2.5 Applications
- 2.6 Android Startup and Zygote
- 2.7 Android Debug bridge
- 2.8 Android Permission model
- 2.9 Android Manifest File

### 3. Design Android UI Layout: (14 Periods)

- 3.1 Android application components Intent, Activity, Activity Life cycle, Broadcast receivers, Services and Manifest
- 3.2 Create Application and new Activities
- 3.3 Expressions and Flow control, Android Manifest

- 3.4 Simple UI -Layouts and Layout properties • Fundamental Android UI Design • Introducing Layouts • Creating new Layouts • Drawable Resources • Resolution and density independence (px, dp, sp), XML Introduction to GUI objects viz. • Push Button • Text / Labels • Edit Text • Toggle Button • Weight Sum • Padding

**4. Develop Event driven Programming in Android : (8 Periods)**

- 4.1 Event driven Programming in Android (Text Edit, Button clicked etc.)
- 4.2 Creating a splash screen
- 4.3 Android Activity Life cycle
- 4.4 Introduction to threads in Android.

**5. Develop application with menus and dialog boxes : (16 Periods)**

- 5.1 Menu: Custom Vs. System Menus
- 5.2 Creating and Using Handset menu Button (Hardware)
- 5.3 Android Themes, Dialog, create an Alter Dialog
- 5.4 Toast in Android, List & Adapters
- 5.5 Android Manifest.xml File

**6. Develop applications with database : (16 Periods)**

- 6.1 SQ Lite: Open Helper and create database
- 6.2 Open and close a database

**REFERENCE BOOK**

- 1 Professional Android 2 Application Development, Reto Meier Wiley India Pvt Ltd
- 2 Beginning Android, Mark L Murphy Wiley India Pvt Ltd
- 3 Professional Android, Sayed Y. Hashimi and Satya Komatineni Wiley India Pvt Ltd

**LAB EXERCISES**

- 1. Study of Installation and configuration of Android Development Framework.
- 2. Study of Various Android Development Environment (IDE)
- 3. Design an Application in Android Environment representing a Simple Calculator

4. Develop an application for working with Menus and screen Navigation
5. Develop an Application demonstrating internal storage to store private data on the device memory.
6. Design a simple to-do list application using SQLite
7. Develop an application for connecting to the internet and sending email.
8. Develop an application for working with graphics and animations
9. Develop an application for working with location based service.
10. Develop an application for working with device camera.

### SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Period)	Marks Allocation
1	16	12
2	10	10
3	14	12
4	8	10
5	16	12
6	16	14
<b>Total</b>	<b>80</b>	<b>70</b>

# JAVA PROGRAMMING

Subject Code : 055001

L	T	P
5	-	4

## RATIONALE

Today almost every branch of computer science is feeling presence of object - orientation. Object oriented technology is successfully incorporated in various fields of computer science. Since its arrival on the scene in 1995, the Java has been accepted as one of the primary programming language. This subject is designed to give you exposure to basic concepts of object - oriented technology. This subject will help in learning to write programs in Java using object - oriented paradigm. Approach in this subject is to take Java as a language that is used as a primary tool in many different areas of programming work.

## OBJECTIVES

On completion of the following units of syllabus contents, the students must be able to

- Know the paradigms of programming languages.
- Understand the concepts of Object Oriented Programming.
- State the benefits and applications of Object Oriented Programming.
- Know the history of development of Java.
- Comprehend the features and tokens of Java.
- Explain about the control structures used inJava.
- Use of Arrays and Vectors in Java Program.
- Demonstrate the use of string and String Buffers.
- Define Class with the attributes and methods.
- Understand the need for interfaces.
- Implement Interfaces in classes.
- Create packages.
- Write simple Applets.
- List the types of AWT Components and types of exceptions.
- Handle the errors using exceptions.
- Understand the concepts of multithreading.
- Develop multithreaded programs in Java.
- Define stream and list the types of streams.

## DETAILED CONTENTS

### 1. Basics and Language Fundamentals : (15 Periods)

Java features, Java Runtime Environment, Java Virtual Machine (JVM), Java-API, Java Programs, Essential Elements of a Java Application, Compiling and Running an Application, Lexical Tokens, Identifiers, Keywords, Literals- Integer & Floating Point Literals, Boolean Literals, Character Literals, String Literals, White Spaces, Comments, Primitive data types- Integer Types, Char Types, Floating Types, Boolean Types, Class Declaration, Variable Declaration- Declaring and Initializing Variables of Primitive Type, Command Line Arguments, Comments, Arithmetic and Logical Operators, Evaluation of Expressions, Type casting-Widening and Narrowing,

### 2. Declarations, Control Structures, Arrays: (15 Periods)

Control Statements: - if else statement, nested if else statement, switch statement, while, do-while and for loop, break and continue.

Enumerated Types:- Declaring Type safe Enums, Declaring Enum Constructors and Members, Implicit static methods for Enum Types, Inherited Methods from the Enum Class, Extending Enum Types.

Arrays: - Declaring Array Variables, Constructing an Array, Initializing an Array, Anonymous Arrays, Multidimensional Arrays, String Array, String Methods, String Buffer Class.

### 3. Classes, Interfaces and Access Control: (20 Periods)

Class and Objects: Class Declarations, Method Declaration, Constructors- Default and Overloaded Constructors, Defining a class, Instance Members, Static Members, Primitive and Reference Variable, Initial Values for Variables, Lifetime of Variable, Objects, Invoking Methods, Instance Initializer Block, Static Initializer Block, Methods Creating objects, Accessing class members, Constructors, Method Overloading, Static members, Nesting of Methods, this keyword, Command line input,

Parameter Passing: Passing Primitive and Reference Values, Passing Array, final parameters, Variable Arity Methods- Calling Varargs Methods, Non-Varargs Method Calls, The main method.

Access Control:- Packages- Defining Package, Using Packages, Compiling Code onto Package, Running Code from Package, Scope Rules- Class scope for Members, Block Scope for Local Variables, abstract classes, final classes, Member Accessibility Modifiers- public, private Default and protected accessibility for members, Other Modifiers for Members- static Members, final Members, abstract Methods, synchronized Methods, native Methods, transient field, volatile Field.

Inheritance:- Inheritance, Inheritance Hierarchy, Overriding methods, Hiding Methods- Field Hiding, Static Method Hiding, this and super Constructor Call, Chaining Constructors using this and super, Inheritance vs Aggregation, Reference casting- instance of Operator, Cast Operator.

Abstract Class and Interface: Abstract Class, Abstract method Declarations, Extending Abstract Class, Defining interface, Extending Interface, Implementing Interfaces, Extending Interfaces, Interface References, Constants in Interface, Default values for Members, Default Accessibility Modifiers for Members.

#### **4. Applets and Awt Controls : (15 Periods)**

Applets: Introduction –Applet Life cycle –Creating & Executing an Applet – Applet tags in HTML –Parameter tag –Aligning the display - Graphics Class: Drawing and filling lines – Rectangles – Polygon – Circles – Arcs – Line Graphs – Drawing Bar charts AWT Components and Event Handlers: Abstract window tool kit – Event Handlers – Event Listeners – AWT Controls and Event Handling: Labels –Text Component –Action Event – Buttons –Check Boxes –Item Event - Choice –Scrollbars –Layout Managers- Input Events –Menu

#### **5. Exception Handling, Multi Threads I/O Streams: (15 Periods)**

Exception Handling: Exception, Advantages of Exception Handling, Checked Exceptions, try-catch-finally Construct, try-finally Construct, Throwing an exception, Throws Clause.

Multithreading: Thread Class, Creating Threads, Life of a Thread, Defining & Running Thread, Thread Methods, Thread Priority, Synchronization, Implementing Runnable interface, Thread Scheduling.

JDBC- Architecture of JDBC- Two-tier Architecture, Three-tier Architecture, JDBC drivers, Connect a Java Application to Database.

I/O STREAMS: Basics Concepts, Input and Output Stream, File Input and Output Stream, Printwriter Class, Write Method, Read and Readline Method.

### **TEXT BOOK**

1. Programming with Java, E. Balagurusamy Tata Mc-Graw Hill, New Delhi 5th Edition
2. Java, A Beginner's Guide Herbert Schildt Oracle Press 6thEdition

### **LIST OF PRACTICALS**

1. Write a Java program to display the count of all commands line arguments and list each in a line

2. Write a program to find out sum of digits of given number
3. Write a program to display multiplication table in row, column format
4. Write a program to
  - a) To find whether the given number is prime or not
  - b) To display all prime numbers in a given range of numbers
5. Write a program to create an array of integers and accept a number. Check whether it exists in the array. Create your own exception with appropriate error message and raise the exception when the element is not found in the array.
6. Write a program to copy a file to another file using java.io package Classes.
7. Write a program to get a file at runtime and display the number of lines, words and characters in that file.
8. Programming exercise on Arrays and String
9. Programming exercise on inheritance
10. Write Program for exception handling
11. Write programs for Multithreading
12. Programming exercise on Java applets
13. Write program for Java Data base connectivity

### SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Period)	Marks Allocation
1	15	12
2	15	12
3	20	20
4	15	13
5	15	13
<b>Total</b>	<b>80</b>	<b>70</b>

# COMPUTER HARDWARE AND SERVICING

Subject Code : 055003

L	T	P
5	-	4

## RATIONALE:

A Computer Engineer should be able to install and maintain Keyboard, Printer, Mouse, Monitor, etc. along with the computer system. Additionally he should also be able to maintain and service mobile phones. The course provides the necessary knowledge and skills regarding working, construction and interfacing aspects of peripherals. The students will get to know how various peripherals communicate with central processing unit of the computer system and pattern their respective operations. The student will also get to know about how Mobile phones are maintained. This subject provides the required background of installation, maintenance and testing of peripheral with Computers and Laptops. This also provides the background of installation and troubleshooting of Mobile Phones.

## OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to

- Know the evolution of Personal Computer from PC through Core i and Laptop.
- Know and explain the major components that make up the system unit.
- Know the data process and store them in meaningful information.
- Explain about the principle of operations of Keyboard, Mouse and Displays.
- Understand the components of media system.
- Know the Basics, working principle, specification and modern technology of different types of drives.
- Know the specification of I/O Ports of all I/O devices like serial, parallel, USB – Game port, Blue tooth and IP Connectors
- Know the operation, working principle and troubleshooting of devices like Dot matrix, Inkjet, Laser, Thermal, MFP Printers.
- Know the aspects related to Power Supply.
- Understand the common problems in the computer system and the peripherals
- Trouble shoot the problems in Personal computers.
- Trouble shoot the problems in Computer peripherals.

- Know and explain the major components of Laptop.
- Trouble shoot the problems in Laptop.
- Understand the basic components and tools used in servicing of Mobile phones.
- Know to install the software required for mobile phones and to maintain it.
- Troubleshoot the problems in Mobile Phones.

## DETAILED CONTENTS

- 1. Motherboard components: (6 Periods)**

Processor sockets/slots – Memory sockets – Chipsets – Cache– BIOS – Clock generator – RTC – Super I/O Controller – Power connector – Battery – Keyboard/ Mouse Connectors – Jumpers – Ports and Headers – Pin Connectors -Motherboard Form factor - Hardware, Software and Firmware.  
**Mother Board:** Architecture and block diagram
- 2. Processors: (6 Periods)**

Introduction –Core2 Duo processor, Quad core processor, Core i3, i5, i7 series, AMD A10 series, Xeon Processor.
- 3. Chipsets: (2 Periods)**

Chipset basics - North / South Bridge architecture.architecture and Hub
- 4. Bus Standards: (2 Periods)**

Overview and features of PCI, AGP, USB, & Processor Bus.
- 5. Primary and Secondary Memory: (4 Periods)**

Introduction - Memory speed - Access time - Wait states. Main Memory – types - Memory errors. Hard Disk: Introduction – Construction – Working Principle – File Systems –Formatting and Troubleshooting.
- 6. Keyboard and Mouse: (4 Periods)**

Keyboard: Interfacing and Signals (USB, Wireless), Types of keys, Keyboard Matrix, Key bouncing, Types of keyboard (Simple, Mechanical). Mouse: Optical mouse operation – Optical mouse cleaning– Troubleshooting flowchart for a mouse.

**7. Printers and Scanners:****(4 Periods)**

Printer: Introduction – Types of printers – Dot Matrix, Inkjet, Laser, Thermal, MFP printer (Multi Function Printer) - Operation and Troubleshooting.  
Scanner: Introduction, Scanner mechanism, working principle – Types of Scanners (Bar code, Handheld, Flatbed) –Preventive maintenance and Troubleshooting.

**8. Displays and Graphic Cards:****(2 Periods)**

Displays: LCD Principles – Plasma Displays – TFT Displays - LED Displays.  
Graphic Cards: Video capture card.

**9. SMPS:****(4 Periods)**

Block diagram – Basic Principles and Operations – O/P Voltage –Cable color code – Connectors and Power Good – Common Failures (No circuit diagram to be discussed)

**10. Bios:****(4 Periods)**

Bios functions – Cold and Warm booting – BIOS error codes – BIOS interrupts – BIOS advanced setup. Upgrading BIOS, Flash BIOS-setup. Identification of different BIOS (AMI, AWARD BIOS).

**11. POST:****(2 Periods)**

Error, Beep Codes, Error messages, Post Hardware.– Faults related to

**12. Laptop:****(6 Periods)**

Difference between laptop and desktop- Types of laptop–Block diagram – working principles–configuring laptops and power settings - SMD components, ESD and precautions

**13. Laptop components:****(4 Periods)**

Adapter – Types, Battery –Types and basic problems, RAM– types, CPU – types, Laptop Mother Board - block diagram, Laptop Keyboard.

**14. Installation and Troubleshooting:****(4 Periods)**

Formatting, Partitioning and Installation of OS –Trouble Shooting Laptop and Desktop computer problems.

**15. Preventive Maintenance and Upgrading:****(4 Periods)**

Preventive Maintenance: Tools required – active and passive maintenance – Types of Diagnostics software – Preventive Maintenance Schedule. Upgrading of Systems: Motherboard, Memory, CPU, Graphics Card, BIOS up gradation and Updating of System & Application software.

**16. Mobile Phone Components:****(4 Periods)**

Basics of mobile communication, Components: battery- antenna - ear piece - microphone - speaker-buzzer - LCD - keyboard. Basic circuit board components – Names and functions of different ICs used in mobile phones.

**17. Tools & Instruments Used in Mobile Servicing:****(4 Periods)**

Mobile servicing kit --soldering and de-soldering components using different soldering tools - Use of multi-meter and battery booster.

**18. Installation & Troubleshooting:****(6 Periods)**

Assembling and disassembling of different types of mobile phones – Installation of OS - Fault finding & troubleshooting- Jumper techniques and solutions.

**19. Software:****(4 Periods)**

Flashing- Formatting- Unlocking - Use of secret Downloading- Routing.-

**20. Diagnostic Software and Viruses:****(4 Periods)**

Mobile Viruses – Precautions – Anti virus Software.

**TEXT BOOK**

1. Computer Installation and Servicing, D. Balasubramanian Tata Mc-Graw Hill, New Delhi Second Edition 2010
2. PC Repair and Maintenance Joel Rosenthal Fire wall Media, New Delhi First Edition 2007 Reprint : 2012
3. Modern Computer Hardware, Manahar Lotai, BPB Second Revised Course Pradeep Niar, Payal Lotia Publication, New Delhi and Updated Edition 2011
4. Troubleshooting, Maintaining and Repairing PCs Stephen J. Bigelow TMH, New Delhi Fifth Edition
5. PC Hardware in a nutshell Robert Bruce Thompson. O'Reilly Media Third Indian Reprint 2008.

6. The Laptop Repair Workbook: An Introduction to Troubleshooting and Repairing Laptop Computers. Morris Rosenthal Foner books First Edition 2008
7. The Cell Phone Handbook P.J. Stetz and Penelope Stetz Find Tech Ltd Second Edition
8. Advanced Mobile Repairing Pandit Sanjib BPB Publication, New Delhi First Edition 2010

## LAB EXERCISES

1. Identification of system layout (Study Exercise)
  - a) Front panel indicators & switches and front side & rear side connectors.
  - b) Familiarize the computer system Layout: Marking positions of SMPS, Motherboard, HDD, DVD and add on cards.
  - c) Configure bios setup program and troubleshoot the typical problems using BIOS utility.
2. HARD DISK
  - a) Install Hard Disk.
  - b) Configure CMOS-Setup.
  - c) Partition and Format Hard Disk.
  - d) Identify Master /Slave / IDE Devices.
  - e) Practice with scan disk, disk cleanup, disk De - fragmentation, Virus Detecting and Rectifying Software.
3.
  - a) Install and Configure a DVD Writer & Blu-ray Disc Writer.
  - b) Recording a Blank DVD & Blu-ray Disc.
4. Printer Installation and Servicing
  - a) Install and configure Dot matrix printer and Laser printer.
  - b) Troubleshoot the above printers
5. Assemble a system with add on cards and check the working condition of the system and install Dual OS.
6. Identification of mobile phone components (Study Exercise)
  - a) Basic mobile phone components.
  - b) Familiarizing the basic circuit board components: Marking position of different IC and Switches in the Network and Power sections of the PCB.
7.
  - a) Assembling and Disassembling of Mobile Phones.
  - b) Fault finding and troubleshooting of Ear piece, Microphone, Keypad and Display Sections of Mobile Phones.
8. Flashing, Unlocking and Formatting memory cards in Mobile phones.

9. Do the following cabling works in a network
  - a) Cable Crimping
  - b) Standard Cabling
  - c) Cross Cabling
  - d) I/O Connector Crimping
  - e) Testing the Crimped cable using a Cable tester
10. a) Configure Host IP, Subnet Mask and Default Gateway in a system in LAN (TCP/IP Configuration).
  - b) Configure Internet connection and use IPCONFIG, PING / Tracert and Netstat utilities to Debug the Network issues.
11. a) Install and configure Network Devices: HUB, Switch and Routers
  - b) Install and Configure Wired and Wireless NIC and transfer files between systems
12. Transfer files between systems in LAN using FTP Configuration. Install a printer in LAN and share it in the network.
13. Installation of Windows 2008 / 2013 Server.
14. Installation and configuration of DHCP Server.
15. Installation and configuration of Mail Server.
16. a) Installation of Red Hat Linux using Graphical mode.
  - b) Installation of Red Hat Linux using VM ware.
17. a) Configuring and troubleshooting of /etc/grub.conf
  - b) Configuring and trouble shooting of /etc/passwd

**Note:**

The students must and should install software's. After the demonstration, the same is uninstalled. Each batch has to learn to install and use the tools.

**TOPICS & ALLOCATION OF HOURS :**

Unit No.	Topics	Time ( Hours)
I	MOTHERBOARD COMPONENTS	15
II	MEMORY & I/O DEVICES	15
III	DISPLAY, POWER SUPPLY & BIOS	15
IV	MAINTENANCE & TROUBLESHOOTING OF DESKTOP AND LAPTOP COMPUTERS	17
V	MOBILE PHONE SERVICING	18
TEST AND REVISION		10
<b>TOTAL</b>		<b>90</b>

## SCHEME OF VALUATION

<b>Hardware Requirements :</b>	30 Nos
Desktop Systems	06 Nos
Hard disk drive	06 Nos
DVD, Blu-ray Drive	20 Nos
Blank DVD , Blu-ray Disc	
Head cleaning CD	01 Nos
Dot matrix Printer	02 Nos
Laser Printer	01 No
Server	06 Nos
Mobile phones	
<b>Network Requirements:</b>	06 Nos
Crimping Tool	06 Nos
Screwdriver set	
Network Cables	02 Nos
Modem	01 No
Hub	01 No
Router	02 Nos
Switch	
<b>Software Requirements:</b>	
Windows OS	
Windows Server 2008 / 2013 and LINUX.	
Antivirus software.	
DVD and Blu-ray Burning S/W.	
Mobile Phone Flashing S/W	

## SCHEME OF VALUATION

Procedure Writing – One Question from PART - A	10 Marks
Procedure Writing – One Question from PART - B	10 Marks
Executing Exercise (PART – A)	10 Marks
Executing Exercise (PART – B)	10 Marks
Result(PART – A)	5 Marks
Result(PART –B)	5 Marks
Demonstration of mini project	5 Marks
VIVA - VOCE	5 Marks
<b>TOTAL</b>	<b>60 Marks</b>

### SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Period)	Marks Allocation
1	6	5
2	6	5
3	2	3
4	2	3
5	4	3
6	4	3
7	4	3
8	2	3
9	4	3
10	4	3
11	2	3
12	6	6
13	4	3
14	4	3
15	4	3
16	4	3
17	4	3
18	6	6
19	4	3
20	4	3
<b>Total</b>	<b>80</b>	<b>70</b>

## MINOR PROJECT WORK

Subject Code : 055005

L	T	P
-	-	12

### RATIONALE

Minor project work aims at exposing the students to the various industries dealing with computers. It is expected from them to get acquainted with computer environment possess desired attitudes. For this purpose student during middle of the course are required to be sent for a period of two to four weeks at a stretch in different establishments. Depending upon the interest of students they are sent for exposure to:

### OBJECTIVES

- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment
- Develop software packages or applications to implement the actual needs of the community.
- Get exposure on industrial environment and its work ethics.
- Understand what is entrepreneurship and how to become an entrepreneur.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project report.
- Expose students to the field of computing and to gain experience in software design.
- Understand and gain knowledge about disaster management.

### GUIDELINES FOR PROJECT FORMULATION

The project work constitutes a major component in most of the professional programmes and it is to be carried out with due care and should be executed with seriousness by the candidates.

**Batch Size : Maximum 6 students per batch TYPE**

### TYPE OF PROJECT

As majority of the students are expected to work out a real life project in some industry/research and development laboratories/educational institutions/software

companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. Students are encouraged to work in the areas listed at the end. However, it is not mandatory for a student to work on a real life project. The student can formulate a project problem with the help of Guide.

## **PROJECT PROPOSAL (SYNOPSIS)**

**The project proposal should be prepared in consultation with your guide during fifth semester.** The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. **The project work should compulsorily include the software development.** The project proposal should contain complete details in the following form:

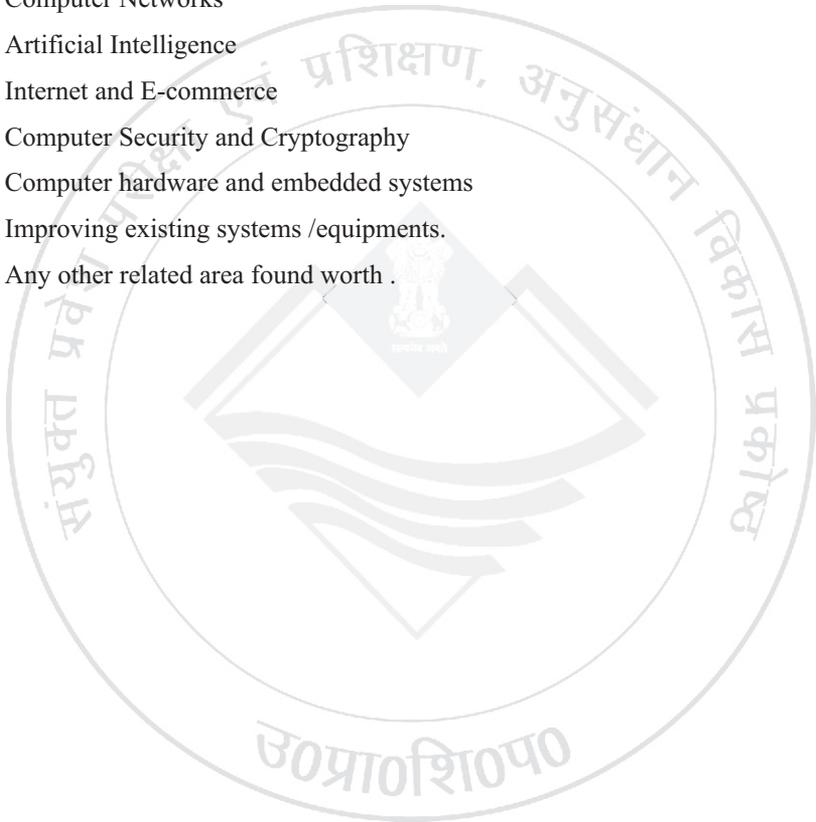
1. Title of the Project.
2. Introduction and Objectives of the Project.
3. Project Category (DBMS / OOPS / Networking / Multimedia / Artificial Intelligence / Expert Systems etc.).
4. Tools / Platform, Hardware and Software Requirement specifications.
5. Analysis (DFDs at least up to second level, ER Diagrams/ Class Diagrams/ Database Design etc. as per the project requirements).
6. A complete structure which includes:
  - Number of modules and their description to provide an estimation of the student's effort on the project.
  - Data Structures as per the project requirements for all the modules.
  - Process logic of each module.
  - Testing process to be used.
  - Reports generation (Mention tentative content of report).
7. Are you doing this project for any Industry/Client? Mention Yes/No. If Yes, Mention the Name and Address of the Industry or Client.
8. Future scope and further enhancement of the project. Also mention limitation of the project.

## **PROJECT PROPOSAL SUBMISSION AND APPROVAL**

After finalizing the topic and the selection of the guide, students should be submitting the Project Proposal to the HOD along with the synopsis and bio-data of the guide. Incomplete project proposals in any respect will be immediately rejected. The project synopsis will be sent to project monitoring committee for final approval.

## SUGGESTIVE AREAS OF PROJECT WORK:

- Database Management Systems
- Software Engineering and Software Development
- Web page Designing
- Digital Image Processing
- Computer Graphics and Animation
- Multimedia Systems
- Computer Networks
- Artificial Intelligence
- Internet and E-commerce
- Computer Security and Cryptography
- Computer hardware and embedded systems
- Improving existing systems /equipments.
- Any other related area found worth .









## LEARNING OUT COMES AND MEANS OF ASSESSMENT

### BRANCH NAME –COMPUTER SCIENCE AND ENGINEERING

### SEMESTER – V

S.No.	Title of Subject/Unit	Learning Outcomes	Means of Assessment
1	Software Engineering*	At the end of the course, the student will be able to develop clear understanding of techniques for design basic algorithm for real life projects. This subject also provide how data structure techniques is essential for programming.	Assignments, Power Point Presentation, Class Test, Mid Term Examination & Semester examination. Practical assessment is done through Program execution and testing, Practical Records and Viva voce.
2	Android Application Development*	At the end of the course, the student will be able to develop clear understanding of principles and concepts of Object Oriented Programming. This subject will provide acquaintance with fundamental concepts of Programming.	Assignments, Power Point Presentation, Class Test, Mid Term Examination & Semester examination. Practical assessment is done through Program execution and -testing, Practical Records and Viva voce.
3	Java Programming*	At the end of the course, the student will be able to develop clear understanding of Internet Technologies and Web Programming. This subject will provide hands on experience and good working knowledge in HTML, CSS, JSP and scripting language.	Assignments, Power Point Presentation, Class Test, Mid Term Examination & Semester examination. Practical assessment is done through Program execution and testing, Practical Records and Viva voce.
4	Computer Hardware and Servicing	At the end of the course, the student will be able to develop clear understanding of data base concept and Technologies. This subject will provide hands on experience and good working knowledge in SQL.	Assignments, Power Point Presentation, Class Test, Mid Term Examination & Semester examination. Practical assessment is done through Program execution and testing, Practical Records and Viva voce.

5	Minor Project	At the end of the course, the student will be able to develop with fundamental concepts of Computer System Organization and Architecture. Students will be make familiar with DMA, Assembly Language, CPU Organization and I/O organization.	Assignments, Power Point Presentation, Class Test, Mid Term Examination & Semester examination.
6	Vocational Training	At the end of the course, the student will be able to develop with fundamental concepts of Computer Network, Security, cryptography and IT act. Students will be make familiar with security policies.	Assignments, Power Point Presentation, Class Test, Mid Term Examination & Semester examination.