

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,
BHILAI**

DIPLOMA PROGRAMME IN COMPUTER SCIENCE AND ENGINEERING

Semester –V

COURSE OF STUDY AND SCHEME OF EXAMINATION

S.No	Board of Study	Subject Code	Subject	Periods/Week (In Hours)			Scheme of Examination						Credit L+(T+P)/2
				L	T	P	Theory			Practical		Total Marks	
							ESE	CT	TA	ESE	TA		
1.	Electronics & Telcomm Engg	222511 (28)	Microprocessor & Interfaces	3	1	-	100	10	20	-	-	130	4
2.	Computer Science Engg	222512 (22)	Computer Troubleshooting and maintenance	3	1	-	100	10	20	-	-	130	4
3.	Computer Science Engg	222513 (22)	Java Programming	3	1	-	100	10	20	-	-	130	4
4.	Computer Science Engg	222514 (22)	LINUX	3	1	-	100	10	20	-	-	130	4
5.	Computer Science Engg	222515 (22)	Software Engineering	3	2	-	100	10	20	-	-	130	4
6.	Computer Science Engg	222521 (22)	Microprocessor & Interfaces Lab	-	-	3	-	-	-	50	20	70	2
7.	Computer Science Engg	222522 (22)	Computer Troubleshooting and maintenance, Lab	-	-	3	-	-	-	50	20	70	2
8.	Computer Science Engg	222523 (22)	Java Programming Lab	-	-	4	-	-	-	50	20	70	2
9.	Computer Science Engg	222524 (22)	LINUX Lab	-	-	4	-	-	-	50	20	70	2
10.	Computer Science Engg	222525 (22)	Industrial Training/Seminar*	-	-	1	-	-	-	50	20	70	1
TOTAL				15	6	15	500	50	100	250	100	1000	29

L : Lecture hours : T : Tutorial hours, P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment ;

*Industrial Training will be organised after 4th sem, evaluation will be done in 5th semester.

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI**

- A) **SEMESTER** : V
 B) **SUBJECT TITLE** : **MICROPROCESSOR & INTERFACES**
 C) **CODE** : 222511 (28)
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**
 E) **RATIONALE** :

This subject is basically designed to introduce the students with various components of digital circuits and devices. The various digital components and their working is covered in first part.

The other part mainly deals with the microprocessor and microcomputers. The microprocessor 8085 architecture, working & programming is covered which aims to introduce the students with internal working of computer & helps to develop logical ability of student to prepare programs/software.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit L+(T+P)/2
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
222511 (28)	3	1	-	100	10	20	-	-	130	4
222521 (22)	-	-	3	-	-	-	50	20	70	2

L : Lecture hours ; T : Tutorial hours; P : Practical hours
 ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1	Architecture of microprocessor 8085	10	20
2	Assembly language programming of 8085	22	30
3	Interrupts, serial I/O, stacks and subroutines	5	10
4	Interfacing & I/O devices	7	10
5	Application of microprocessor	5	10
6	DMA Controller	7	10
7	Introduction to advanced microprocessor	8	10
	TOTAL	64	100

H) DETAILED CONTENT	
CHAPTER-1	ARCHITECTURE OF MICROPROCESSOR 8085
	<ul style="list-style-type: none"> • Architecture
	<ul style="list-style-type: none"> - 8085 microprocessor architecture - Buses - Registers - Flags
	<ul style="list-style-type: none"> • Preliminary Interfacing Devices
	<ul style="list-style-type: none"> - Buffers - Tri-state devices - Decoders - Encoders - Latches
	<ul style="list-style-type: none"> • Memories & their interfacing
	<ul style="list-style-type: none"> - Types of memories such as ROM , PROM , EPROM, EEPROM RAM (static and dynamic) - Memory Organisation and operation - Study of 6116, 2732 memory chip
CHAPTER – 2	ASSEMBLY LANGUAGE PROGRAMMING OF 8085
	<ul style="list-style-type: none"> • Classification of Instruction
	<ul style="list-style-type: none"> - According to format, - According to addressing modes - According to operations.
	<ul style="list-style-type: none"> • Execution of an instruction. • Timing Cycles.
	<ul style="list-style-type: none"> - T-state. - Op code Fetch Cycle. - Machine Cycle. - Memory Read/Write Cycle. - I/O Read/Write Cycle. - Instruction Cycle.

	<ul style="list-style-type: none"> • Assembly Programs Based On <ul style="list-style-type: none"> - Data Transfer - Arithmetic - Logical - Branching Instructions. - Machine Control instructions.
CHAPTER-3	INTERRUPTS, SERIAL I/O, STACKS AND SUBROUTINES
	<ul style="list-style-type: none"> • Concepts of Stacks and subroutine <ul style="list-style-type: none"> - PSW (Program status word) - Concepts of stack and instructions of stacks
	<ul style="list-style-type: none"> • Subroutines <ul style="list-style-type: none"> - Concepts of subroutine - Unconditional and conditional call & return.
	<ul style="list-style-type: none"> • Interrupts of 8085. <ul style="list-style-type: none"> - Hardware - Software
	<ul style="list-style-type: none"> • Instruction related to interrupts.
CHAPTER-4	INTERFACING & I/O DEVICES
	<ul style="list-style-type: none"> • Memory mapped I/O and I/O mapped I/O • Study of 8255. • Study of 8155.
CHAPTER-5	APPLICATION OF MICROPROCESSOR
	<ul style="list-style-type: none"> • Interfacing of Devices <ul style="list-style-type: none"> - Interfacing of ADC/DAC (0808/0809) - Interfacing of stepper motor
CHAPTER-6	DMA CONTROLLER
	<ul style="list-style-type: none"> • Block Diagram, Operations of DMA Controller, DMA request and Acknowledgement
CHAPTER-7	INTRODUCTION TO ADVANCED MICROPROCESSOR
	<ul style="list-style-type: none"> • Comparative Study of various Microprocessor(From 8085 and latest Pentium Series processors)

I) SUGGESTED IMPLEMENTATION STRATEGIES

- The subject will be taught as per the given teaching scheme for theory as well as practical.
- The identified practical sections will be conducted along with theory section.
- The subject teacher will prepare & provide learning material to students.
- CBT (Computer Based Training) may be used especially for the topics of digital techniques.

J) LEARNING RESOURCES SUGGESTED TO BE USED

a) Reference Books

S. NO.	TITLE	Author, Publisher & Address, Edition, Year of Publication
1	Modern Digital Electronics	R.P.Jain , Tata Mc Graw Hill
2	Digital Principles	Malvino Leach , Tata Mc Graw Hill
3	8085/8080 Architecture	R.Gaonkar , Penram International
4	Introduction to Microprocessor	A.P.Mathur
5	Introduction to Microprocessor	B. Ram

Course: Microprocessor & Interfaces, Lab

Code: 222521 (22)

Hours: 48

K) LIST OF PRACTICALS/ TUTORIALS:

Practical:

- Atleast two Assembly Programs Based On:
 - Data Transfer
 - Arithmetic
 - Logical
 - Branching Instructions
 - Rotate.
- Program for 8 Bit Multiplications
- Program for Finding Largest.
- Program for Sorting
- Program for Block Transfer.
- Program based on Stack.
- Program based on Subroutines.
- Program for Delay Routines.
- Initialization of 8255 in Simple I/O mode.
- A program to generate Square wave.
- Interfacing of ADC/DAC.
- Interfacing of stepper motor.

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

- A) **SEMESTER** : **V**
 B) **COURSE** : **COMPUTER TROUBLE SHOOTING
AND MAINTENANCE**
 C) **CODE** : **222512 (22)**
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**
 E) **RATIONALE** :

PCs are peculiar type of modular electronic machine. They have some moving parts and some parts functioning electronically. The development of computer technology is very fast and the shelf value is not more than six months. Today, large number of students, people in the industry, government sectors etc are purchasing computers for different purposes. But there are only few entrepreneurs in the market who are capable to maintain computer systems like the way TV sets are repaired.

Keeping this scenario in mind, if the size of the industry where the student gets employed is small or the student himself is an entrepreneur who has just started a business, then he should be aware of the different parts of computer system and their functions such as motherboard, floppy disk, hard disk drive, display units etc. It is also expected that after undergoing this subject the students will be able to understand some of the basic symptoms of trouble and to troubleshoot it.

This subject will help the students to develop basic trouble shooting skills. Apart from being a professional in the area of computer application, he would also be able to troubleshoot minor problems of computer systems of its own.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit $L+(T+P)/2$
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
222512(22)	3	1	-	100	10	20	-	-	130	4
222522(22)	-	-	3	-	-	-	50	20	70	2

L : Lecture hours ; T : Tutorial hours; P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1.	Fundamentals	8	12
2.	General Trouble Shooting	6	10
3.	Motherboard Troubleshooting	8	12
4.	Floppy Disk Drive (Controller, Hardware And Maintenance)	10	16
5.	Hard Disk Drives (HDD)	10	16
6.	Display Adapter	6	10
7.	Keyboard	6	10
8.	Viruses	10	14
	Total	64	100

H) DETAILED CONTENT

CHAPTER - 1 FUNDAMENTALS

- Definition: Troubleshooting, Diagnosis
 - Classification of Faults: Hardware faults: Static faults, Dynamic faults, Software faults: System software fault, application software faults.

CHAPTER-2

GENERAL TROUBLESHOOTING

- General Troubleshooting Rules
 - Study of abnormal behavior of PC system for fault finding, Write everything down, Do the easy step first, Reboot and try again, refer system manuals documentation, Observe facts (Ref mark minasi's)
- Steps of Troubleshooting Success
 - Check for operator error
 - Check everything plugged in.
 - Check the software
 - Check external signs
 - Run diagnostic programs (Ref. Mark Minasi's)

CHAPTER – 3

- Motherboard Troubleshooting (Rectification in case of following probable symptoms)
 - RAM error
 - Not enough memory or out of memory
 - Expanded memory unavailable
 - This program has performed an illegal operation and will be shut down
 - Fatal exception error
 - CMOS checksum error

- A motherboard failure is reported but goes away when the PC's outer cover is removed.

CHAPTER-4 FLOPPY DISK DRIVE (Controller, Hardware And Maintenance)

- Introduction
- FDC system interface
- Disk Drive block diagram
- Troubleshooting floppy disk system
 - Drive cleaning
 - Track - 00 - test
 - Error code and beep code
 - Symptoms of failure
 - The floppy drive is completely dead
 - The floppy drive will not read from or write to diskette
 - O.S. reports an error, such as "can't read from drive A:"
 - When a new diskette is inserted in the drive the directory from a previous diskette appears
 - The floppy drive activity LED stays on as soon as computer is powered up.

CHAPTER – 5 HARD DISK DRIVES (HDD)

- Introduction to HDD
- HDC device interface
- Drive concepts
 - Latency
 - Track, sector, and cylinders
 - Landing zone
 - Write pre-compensation
- Concepts of drive formatting
 - Low level formatting
 - Partitioning
 - High level formatting
- Drive testing and troubleshooting
 - Error codes and beep codes
 - Rectification in case of following symptoms:
 - Symptoms and solutions of
 - You see drive activity, but the computer does not boot from the hard drive
 - Error occurs during drive reads or writes
 - The hard drive was formatted accidentally
 - The hard drives root directory is damaged
 - A "sector not found" error message appears on the monitor
 - A "17xx error" appears on the monitor
 - An "Error reading drive c:" error message appears
 - A "track zero (0) not found" error message appears
 - A "hard disk controller failure" message appears on a monitor
 - "Disk Boot Failure", "Non-System-Disk" or "Non ROM Basic -

SYSTEM HALTED" error message appears

- A "File allocation table bad" error appears

CHAPTER-6 DISPLAY ADAPTER

- Introduction
- CRT controller principle
- Video cards
- MDA, CGA, EGA, VGA, SVGA, XGA, AGP
- Video memory and video RAM
- Troubleshooting a monitor
 - Error codes and beep codes
 - Symptoms and rectification
 - A single horizontal/vertical line appears in the middle of the display
 - Raster is present but there is no image
 - There is no image and no raster
 - The displayed characters appear to be distorted
 - The image appears to flip or scroll horizontally/vertically.

CHAPTER-7 KEYBOARD

- Introduction
- Different types of key switches
- Keyboard interfacing
- Keyboard cleaning
- Keyboard troubleshooting
 - Error codes and beep codes
 - Symptoms and rectification
 - During initialization an error message indicates that no keyboard is connected
 - The keyboard is completely dead
 - The keyboard is acting erratically
 - The Num lock feature might not activate when the Num lock key is pressed

CHAPTER – 8 VIRUSES

- Introduction
- Types of viruses
 - Command processor infection
 - Boot sector infection
 - Executable file infection
 - File-specific infection
 - Memory resident infection
 - Macro viruses
- Virus Myths
- Protecting the PC from viruses
- Recognizing an infection
- Dealing with an infection

I) SUGGESTED IMPLEMENTATION STRATEGIES

This subject should be taught by taking help of different visual aids. (It may be actual part of PC).

The students should be demonstrated the possible faults that are encountered where ever possible and he should be explained the process of rectification (e.g. observing beep sound).

J) SUGGESTED LEARNING RESOURCES

a) Reference Books

S. No.	Title	Author, Publisher & Address, Edition, Year of Publication,
1.	IBM PC and Clones	B. Govindrajalu Tata Mc-Graw Hill Publications Pvt. Ltd., New Delhi, Seventh 2000
2.	Troubleshooting, Maintaining & Repairing PC's	Stephen J. Bigelow Tata Mc-Graw Hill Publications Pvt. Ltd., New Delhi
3.	PC Upgrading and Maintenance	Smart Computing, BPB Publications. Second
4.	The Complete PC Upgrade & Maintenance Guide	Mark Minasi, BPB Publications, Tenth
5.	Upgrading and Repairing PC's	Scott Mudler QUE Publications

Course: Computer Troubleshooting and maintenance, Lab

Subject Code : 222522 (22)

Hours: 48

K) LIST OF PRACTICALS

Practical

- Identification of Hardware elements
- Identification of symptoms for failure
 - beep codes and error codes
 - different symptoms of motherboard
 - beep, error and symptoms failure of FDD
 - keyboard interface
 - beep, error and symptoms of failure of keyboard.
- Study of different anti-virus software e.g. Norton
- Assembling Computer machine
- Formatting disk drives
- Creation of Logical Disk Drives
- Installation of Device drivers
- Installation of new Hardware

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI**

- A) **SEMESTER** : **V**
 B) **SUBJECT TITLE** : **JAVA PROGRAMMING**
 C) **CODE** : **222513 (22)**
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**
 E) **RATIONALE** :

Java is a technology that makes it easy to develop programs for distributed applications that can be executed on multiple computers across a network.. Internet and Intranet based applications for web site development and development of on line educational environment can be developed by Java. In this subject the basic concept of Java, Multithread programming and development of Java applets are covered.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit L+(T+P)/2
	L	T	P	Theory			Practical		Total Marks	
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222513 (22)	3	1	-	100	10	20	-	-	130	4
222523 (22)	-	-	4	-	-	-	50	20	70	2

L : Lecture hours ; T : Tutorial hours; P : Practical hours
 ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1	Introducing JAVA	2	6
2	JAVA Language features	4	11
3	Introducing classes & Objects	8	15
4	Wrapper classes of JAVA	6	11
5	Inheritance	10	15
6	Exception handling	10	14
7	Multithreaded programming	12	14
8	JAVA Applets	12	14
Total:		64	100

H) DETAILED COURSE CONTENT

CHAPTER - 1 INTRODUCING JAVA

- A brief History of Java.
- Why Java is popular for Internet.
- Java Applets and Applications
- Security
- Portability
- Java components
- The byte code
 - Java Development kit (JDK)
- Java Virtual Machine (JVM)

CHAPTER – 2 JAVA LANGUAGE FEATURES

- Java program structure :
- Character set, Constants, Variables, Data types, Operators (Arithmetic, Relational, Logical, Conditional, Bit-wise, Special) Expressions (Arithmetic, Logical)
- Branching statements
 - Simple if statement
 - If-else statement
 - Switch – case statement
 - Break, continue
- Looping
 - While loop
 - Do – while loop
 - For loop
 - Break & continue

CHAPTER – 3 INTRODUCING CLASSES & OBJECT

- Class fundamentals
 - The general form of a class
 - A simple class
 - Declaring objects
 - Introducing Methods
 - Adding a method that takes parameters
 - Returning a value
 - Constructors
 - Parameterized constructors
 - The this keyword
 - Instance variable Hiding.
 - Garbage collectors.
 - The finalize() method.
 - Overloading Methods, constructors
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- Using objects as parameters.
- Concept of Nested and Inner classes
- Access control parameters such as public, protected and private.

CHAPTER – 4

WRAPPER CLASSES OF JAVA

- Type casting wrapper classes
 - Boolean, Character, Double, Float, Integer and Long
- Study of string classes and methods
 - Type conversion (toUppercase, toLowercase), Replace(), EqualsLength(), CharAt() and CompareTo()
- Vector Class and Method
 - AddElement(), ElementAt(), Size(), RemoveElementAt(), CopyInto(Array) and InsertElementAt()
- Array one Dim, Two Dimensional

CHAPTER – 5

INHERITANCE

- Inheritance Basics
- Member Access and Inheritance
- A superclass variable can reference a subclass object.
- Using this and super for member and constructor references .
- Creating a multilevel hierarchy.
- Method overloading
- Using final with Inheritance.
- Multiple Inheritance using Interfaces.
 - Using Java Interfaces.
 - Defining an Interfaces.
 - Implementing Interfaces.
 - Applying Interfaces.
 - Variable in Interfaces.
 - Interface to implement call back functions.

CHAPTER – 6

EXCEPTION HANDLING

- Packages – Creating Packages, Accessing package, writing package
- Fundamentals.
- Types.
- Why use exception handling.
- Hierarchy
- Exception handling constructs
- Try-Catch-Finally
- Throw statements
- Throw clause
- Creating your own exception class.

CHAPTER – 7

MULTITHREADED PROGRAMMING

- What are thread.
- Why use thread.
- Creating and running thread.
- Implementing Runnable.
- Extending thread.

- Synchronization.
- Synchronization Methods and statements.
- Creating multiple Threads
 - Thread synchronization.
 - Inter thread communication
 - Priorities and scheduling.
 - Thread local variables

CHAPTER – 8 JAVA APPLETES.

- Applet Basics
 - The Applet class
 - Applet architecture.
- An Applet skeleton
 - Applet Initialization and termination
- Simple Applet Display Methods.
 - Requesting repainting
 - Using the status window
 - HTML APPLET tag
 - Passing parameters to Applet
 - get DocumnetBase() and get CodeBase() , show Document ()

I) SUGGESTED IMPLEMNTATION STRATEGIES

To implement Java programming is a good idea that the student first learn C,C++ although it is not a prerequisite . While implementing this one should give the programming assignments just after the completion of theoretical part of the concerned topic. One can also give more assignments based on the topics as per the availability of time. For effective teaching/learning it is expected that the programming assignments should cover the real time problems. The programming assignment should help a student in developing object oriented programming logic.

Concepts such as inheritance, overloading, polymorphism, Abstract classes of object oriented programming helps in reusability and enhancement. So it is expected that using the oop's principles one should reuse the available utilities of Java.

Java is well known for internet programming can be used for client side as well as server side programming. Keeping client side programming in mind this curriculum is been designed so it is expected that one should design web pages using Applets.

J) SUGGESTED LEARNING RESOURCES

a) Reference Books

S.No.	Title	Year of Publication, Author, Publisher & Address, Edition
1.	The Complete Reference - Java 2	Herbet Schildt, Tata McGraw Hills Publishing Co.l Ltd. N. Delhi, 3 rd edition
2.	Mastering Java-2	John Zukonshi , BPB Publications ,B-14, CONNAUGHT PLACE, New Delhi-110001, Latest Edn
3.	Using Java-2 platform	Joseph L Weber, PHI (Eastern Economy Edition)
4.	Java 2.0	E. Balaguruswami , TMH Publication

Course: Java Programming

**Practical Code:222523(22)
HOURS- 64**

J) SUGGESTED LIST OF EXPERIMENTS

- Program based on Basics. (At least 5)
 - Program using if, Nested if, Switch, loops & breaking loop statements.
 - Program that define classes, create objects, add methods.
 - Develop a program for each
 - Type caste
 - Wrapper
 - String
 - Vector class.
 - Programs to design and inherent and interface.
 - Program to handle an exception by using by Try-Catch-Finally
 - Program to generate own exception class
 - Programs by using multi-threading concept (At least 2)
 - Program using Applet tag in HTML file.
 - Writing simple programs on Applet.
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**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

- A) **SEMESTER** : **V**
 B) **SUBJECT TITLE** : **LINUX**
 C) **CODE** : 222514 (22)
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**
 E) **RATIONALE** :

The subject on 'Linux Operating System' intends to teach the students various services of an Linux operating system, its installation, file system, shell programming, networking. It will enable the student to understand the concept of multi-user operating system, Process management and file security in a network Operating system. These basic concepts will help the students to properly understand single user and multi-user operating systems.

The students will also familiarize themselves with LINUX O.S., its design architecture, commands structures and utilities.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit L+(T+P)/2
	L	T	P	Theory			Practical		Total Marks	
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222514 (22)	3	1	-	100	10	20	-	-	130	4
222524 (22)	-	-	4	-	-	-	50	20	70	2

L : Lecture hours ; T : Tutorial hours; P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher's Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1	Linux – operating system	6	14
2	Essential Linux Commands	12	18
3	Linux processes and other utilities	12	16
4	vi and Other Editors	10	16
5	Shell programming	14	20
6	Installation and system administration	10	16
Total		64	100

G) DETAILED COURSE CONTENT

CHAPTER - 1 LINUX – AN OPERATING SYSTEM

- History and development of LINUX O.S.
 - Features, Structures of LINUX O.S.
 - Kernel, Shell, Applications Utilities.
 - Installation requirements
- LINUX User Interface
 - Classes of user
 - Operational users, Programmers, End users
 - Types of Interface
 - Command language, Command structure, Shell
 - Windows, Icons , slide bars, title bars

CHAPTER – 2 ESSENTIAL LINUX COMMANDS

- Startup & shutdown Process
 - Booting Procedure with different stages
 - Login process, Password concept, who, who am i , tty, date and cal commands
 - System shutdown
- File concept
 - File types in LINUX, Hierarchical directory structure
 - File creating, displaying, concatenating and copying
- Creating and changing directories, removing files and directories
 - cd , cp, md, rm, mkdir, rmdir, cat
- Various users and access rights
- File attributes and permissions
 - Setting permissions
 - Changing permissions
 - Changing group & group ownership of file and directory
chmod, chown, chgrp
- File processing commands
 - wc, head, tail, cut, paste join, split, sort, grep, egrep, tr, comm, cmp, diff, more, less
- File formatting and printing commands
 - pr with all options, lp commands

CHAPTER – 3 LINUX PROCESSES AND OTHER UTILITIES

- On line help facilities in LINUX
 - Man and help command
- Mathematical commands
 - bc, expr, factor, units
- Linking files and directories
- Inter-process communication
 - Pipes and filters
 - tee command
- Other process facilities
 - Background processing,

- Listing all active and background processes,
- ps command with all options,
- Terminating processes,
- Kill command, Process scheduling,
- Nice command,
- Wait command, Sleep command
- Communication commands
 - user to user communication using write
 - Mailing using mail
 - Broadcasting messages using wall

CHAPTER – 4 VI AND OTHER EDITORS

- VI-Editor
 - Features of vi, modes of vi, creating, editing & saving text
 - cursor movement commands, text scrolling commands
 - text deletion commands, find and replace
 - copying and yanking text, cut and paste in vi , set commands, abbreviations and map commands
 - saving files & quitting vi

CHAPTER – 5 SHELL PROGRAMMING AND AWK

- Various LINUX shells
 - bash, csh, ksh
- Shell scripts
 - writing and executing, Parameter substitution, Shell variables, Standard shell variables
 - User define variables
 - Command substitution, Expressions, arithmetic operators, logical, Operators, test expressions, read statement, test command, control structures – for, while and until statements, if structure, nested if structure, if.. then.. elif statement, case structure
- Awk programming
 - Awk program structure
 - use of \$0, \$1, \$2, etc . in Awk, if, for and while statement
 - Relational operators
 - built in functions
 - use of arrays in Awk.

CHAPTER – 6 INSTALLATION AND SYSTEM ADMINISTRATION

- Installation, Requirement
- Linux file system
 - Boot block, super block, inode table, data blocks
 - Partitioning the hard disk for LINUX
 - Installing the LINUX system
- System administration
 - Common administrative tasks, Role of system administrator
 - Managing user accounts – adding and deleting users, changing permissions and ownerships
 - Creating and managing groups

- Creating and mounting files ystem
- Backup and restoring files
- X-configuration , changing X settings
- KDE and Gnome graphical interfaces

I) SUGGESTED IMPENTATION STRATEGIES

- The subject operating systems starts with the basic features of LINUX operating system and their subsequent developments. It includes the various types of users in LINUX OS.
- The chapters 2 to 5 take up LINUX OS commands and Programming. They also deal with various LINUX Processes and editors and utilities. Most of the commands can be covered during practical hours. Students are expected to write the shell scripts specified during practical sessions and if possible develop own utility routines.
- Chapter 6 deals with Installation of LINUX and System Administrations. Demonstration of installation and X-configuration is required here.

J) LEARNING RESOURCES SUGGESTED TO BE USED

a) Reference Books

S. No.	Title	Author, Publisher & Address, Edition,Year of Publication,
1.	Red hat Linux unleashed	Techmedia (BPB publication), Latest
2.	UNIX concept and Applications	Sumitabha Das Tata McGraw Hill Publication, N.Delhi, Latest
3.	Redhat LINUX 7.x Bible	Cristopher negus, IDG books India
4.	Using LINUX	Jack Tackett, David Gunter, PIII, EEE Edition,, Latest
5.	Linux Installation and Administration	Nicholas Wells, Course technology, (Vikas Publishing, New Delhi), Latest
6.	Unix Operating System	Peter Nortorn BPP Publications, Latest

K) LIST OF EXPERIMENTS

- Practice on stty command
- Study of password command
- Study of who, who am i, tty,date and cal commands
- Executing commands in background
- Study of ps , kill commands
- Listing the files in a directory using all options to ls.
- Creating sub-directories.
- Changing the mode of a file/directory.
- Changing the owner of a file/directory.
- Study of file processing commands
- Commands using pipes and I/O redirectors
- Display date using various formats
- User to user communication using communication commands.
- Study of vi editor
- Modes of vi
- Creating and saving files using vi
- Cursor movement commands
- Cut and paste commands
- Find and replace commands
 - Ex mode commands
- Write a shell script for the following
 - The shell script should check whether every argument supplied is a file or a directory and list it accordingly.
 - The shell script should check every argument and carry out the following-
 - If the argument is a directory, then display the number of files or directories present in that directory.
 - If the argument is a file, then display the size of the file
 - If the argument does not exist , then create the directory.
 - The shell script should accept the username as argument and find out at how many terminals has this user logged on.
 - The shell script must display a list of all files in the current directory to which you have read, write and execute permissions.
 - The shell script should delete all lines containing the word “ UNIX ‘ in the files supplied as arguments to this shell script.
- Awk Programming examples with queries for report writing
 - Demonstration of Installation of LINUX OS
 - Mounting of file system – using floppy and CDROM
 - Configuring X-environment
 - Switching between KDE and Gnome
 - Adding Group and Users logins

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

- A) **SEMESTER** : **V**
 B) **SUBJECT TITLE** : **SOFTWARE ENGINEERING**
 C) **CODE** : **222515 (22)**
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**
 E) **RATIONALE**

The objectives of this subject are to make students learn about software development from scratch. This subject will give basic idea of software analysis, design and testing in detail. Students can learn different models used during software development process.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination					Credit L+(T+P)/2	
	L	T	P	Theory			Practical			Total Marks
				ESE	CT	TA	ESE	TA		
222515(22)	3	2	-	100	10	20	-	-	130	4

L : Lecture hours ; T : Tutorial hours; P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1	Introduction to Software engineering	8	12
2	Software process and project matrices	10	12
3	Software project management and planning	10	15
4	Analysis concepts, principles and modelling	14	15
5	Design concepts and principles	14	15
6	Software Quality Assurance	10	15
7	Software Testing models	14	16
	TOTAL	80	100

H) DETAILED CONTENT	
CHAPTER-1	<ul style="list-style-type: none"> • INTRODUCTION TO SOFTWARE ENGINEERING
	<ul style="list-style-type: none"> - Software characteristics, Components & applications, - Software Engineering - a layered technology, Software process models - Linear sequential model, Prototype & RAD Model., Evolutionary - software process model – Incremental model and spiral model.
CHAPTER-2	<ul style="list-style-type: none"> • SOFTWARE PROCESS AND PROJECT METRICS
	<ul style="list-style-type: none"> - S/w process and project metrics :Metrics in the process and project domains . software measurement –size oriented, Function oriented - metrics, Extended function, Logical metrics - Software project management : Project Management Concepts – <ul style="list-style-type: none"> ▪ people problem and process
CHAPTER-3	<ul style="list-style-type: none"> • SOFTWARE PROJECT MANAGEMENT AND PLANNING
	<ul style="list-style-type: none"> - Project Management Concepts – - people problem and process . - project planning : Objectives, Scope, Project Estimation, <ul style="list-style-type: none"> ▪ Decomposition Techniques, Empirical Estimation Models
CHAPTER-4	<ul style="list-style-type: none"> • ANALYSIS CONCEPTS , PRINCIPLES AND MODELLING
	<p>Requirement analysis,</p> <ul style="list-style-type: none"> - Communication Techniques, Analysis principles, Software prototyping, Specifications. - Analysis modelling : Elements of the analysis modeling, Data modeling . Functional modeling and information flow, Behavioral modeling, Data Dictionary.
CHAPTER-5	<ul style="list-style-type: none"> • DESIGN CONCEPTS AND PRINCIPLES
	<ul style="list-style-type: none"> - Design Process, Design concepts, - Design principles, Effective modular design .

	<ul style="list-style-type: none"> - Design methods : Architectural design process, Transform mapping - and transaction mapping, Interface design, - Internal and external - design, Human computer interface design, Interface design - guidelines, procedural design,
CHAPTER-6	<ul style="list-style-type: none"> • SOFTWARE QUALITY ASSURANCE
	<ul style="list-style-type: none"> - Quality concepts, Matrix for software - Quality, Quality movement, S/W quality assurance, S/W Review, - Formal Technical reviews, Formal approaches to SQA, S/W - Reliability, ISO 9000 Quality Standards
CHAPTER-7	<ul style="list-style-type: none"> • SOFTWARE TESTING MODELS
	<ul style="list-style-type: none"> - S/W testing fundamentals, Test case Design, - White and Black Box Testing, Basic path testing, Control structure - S/w testing strategies:Strategic Approach to S/W testing, Unit - Testing, Integration Testing, Validation Testing, System Testing, - Debugging

D) SUGGESTED IMPLEMENTATION STRATEGIES

The subject teachers are expected to demonstrate the making of softwares to the students. A small software project can be made by students to learn analysis, design and testing phase of software development process.

J) LEARNING RESOURCES SUGGESTED TO BE USED

a) Reference Books

S. NO.	TITLE	Author, Publisher & Address, Edition, Year of Publication
1	Software Engineering	R.S. Pressman, Mc-Graw Hills, fifth
2	An approach to software engineering	Pankaj Jalote

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

A)	SEMESTER	:	V
B)	COURSE TITLE	:	INDUSTRIAL TRAINING
C)	CODE	:	222525 (22)
D)	BRANCH/DISCIPLINE	:	COMPUTER SCIENCE & ENGINEERING
E)	RATIONALE	:	

The purpose of industrial training is to offer wide range of practical exposures to latest practices, equipments and techniques used in the field. This training programme will help the student in acquiring hands on experiences of various practices and events required to perform in different job situations. Through the industrial training the students are given an opportunity to develop psychomotor skills and problem solving abilities. The students will have to go for industrial training in the areas related to:

1. Computer Networking
2. Database management system
3. Programming Methodology
4. Computer Hardware
5. Multimedia and web technology

The duration of industrial training will be of four weeks and organised after the end of V semester examination. The industrial Training has basically the following three components: -

1. Orientation Programme
2. Industrial Training in the Industry
3. Report Writing and Evaluation

NOTE :

During the orientation programme complete guidelines will be provided to the students regarding planning, implementation and evaluation of industrial training.

During the training student will have to maintain a daily dairy to record his observations and experiences at field and on the basis of daily dairy student has to prepare and submit Industrial Training Report.

For evaluation each student has to prepare and present a seminar paper related to experience gained during the industrial training. Each student will be evaluated on the basis of daily diary, training report, seminar presentation and viva voce.

F) TEACHING AND EXMINATION SCHEME:

Course Code	Periods/Week (In Hours)			Scheme of Examination						Credit L+(T+P)/2
	L	T	P	Theory			Practical		Total Marks	
222525(22)	-	-	1	ESE	CT	TA	ESE	TA		
				-	-	-	50	20	70	1

L: Lecture hours; T: Tutorial hours, P: Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment ;

Note: Industrial Training will be organised after 4th sem, evaluation will be in 5th semester.