NORTH MAHARASHTRA UNIVERSITY, JALGAON

SYLLABUS FOR

T. Y. B.Sc.

INFORMATION TECHNOLOGY

(With effect from June 2014)

TYBSc Information Technology

(w.e.f June 2014)

Structure

Semester - I	Semester – II
UG-IT 311 Database Management Systems	UG-IT 321 SQL Server-2008
UG-IT-312 System Programming	UG-IT-322 Operating System
UG-IT-313 Data Communication	UG-CS-323 Computer Network and Security
UG-IT-314 JAVA Programming I	UG-IT-324 JAVA Programming II
UG-IT-315 Cyber Law and IT ACT	UG-IT-325 Software Engineering
UG-IT-316 Programming in PHP	UG-IT-326 Linux Operating System
UG-IT-LAB- 301 JAVA Programming –I & II	
UG-IT-LAB- 302 Programming in PHP & Linux Operating System	
UG-IT-LAB- 303 System Programming & SQL Server 2008	

Career Opportunities

The career opportunities after B.Sc. (Information Technology) are quite huge. Many major national and multinational firms take in aspirants who have accomplished their graduation in these fields. The top IT firms in India such as Wipro, TCS, and Infosys etc. offer aspirants very attractive packages. Jobs for professionals in these fields can also be got with management consultancy organizations, power plants, Manufacturing plants, Government organizations, Banks and other organizations that use computers and computer-aided systems are but not limited to:

Programmer or Software Engineer

Computer Engineer

Hardware Designer/Engineer

Systems Engineer, System integrator

System Administration

Technical Support

Support Engineer

Technical Writer

Consultant

Management

Administration

IT Sales and Marketing

IT Officer

DTP Operator

Web Designer

Unit 1 Introduction   *L-10 M:08*

Database, DBMS, RDBMS, Database System Structure, Database Users, Database Administrator, Data Abstraction and levels of Abstraction, Instances & Schemas, Data Independence.

Unit 2 Database Organization   *L-12 M:08*

Data Models: Hierarchical, Network & Relational Model & Object Oriented Model, Database languages (SQL): DDL (Data Definition Language), DML(Data Manipulation Language), DCL (Data Control Language),Procedural & Nom-Procedural, E-R Model: Basic Concepts, E-R Diagram, Mapping Constraints, Keys, Weak and Strong Entity sets.

Unit 3 Relational Representation & SQL   *L-12 M:08*

Relational Algebra & Relational Calculus, Codd's Rules, Introduction to SQL, Queries & sub-queries, Functional Dependency, Normalisation (1NF, 2NF, 3NF, BCNF).

Unit 4 Database Implementations   *L-10 M:08*

Database security, Database integrity, Transaction Concept, Transaction State, Transaction Properties (ACID), and Concurrency control, Backup & recovery:- Log base Recovery, Shadow Paging, Differed Updates.

Unit 5 Distributed Databases   *L-08 M:08*

Online Transaction Processing (OLTP), Online Analytical Processing (OLAP), Distributed Databases, Advantages and disadvantages of distributed database, client server databases, Homogeneous & Heterogeneous Database.

Reference Books:

1. Alex Leon & Mathews leon, Database System Concepts, Vikas Publication House Ltd.

2. Abraham Silberschatz, Henry F. Korth, *et.al.*, Database System Concepts, McGraw-Hill.

Unit 1 INTRODUCTION TO SQL and SQL Server 2008   L : 08 M: 04

Introduction to SQL
Overview of SQL Server 2008 ,
New Features in SQL Server 2008,
 Data types in SQL Server 2008
SQL Server 2008 Editions

Unit 2 DATABASE AND TABLE OPERATIONS   L : 06 M: 04

Database Operations - 1.Creating a Database 2.Dropping the Database
Table Operations – 1.Create 2. Alter 3.Truncate 4. Drop

Unit 3 SQL – Statements, Operators, Functions.   L : 10 M: 06

Opening the Query Editor Window
SQL Data Statements   - SELECT, INSERT, UPDATE, DELETE
Operators   - Arithmetic, Logical, Comparison, Assignment, Bitwise ,Relational
String   - Concatenation, Unary ,Compound Assignment
 Functions   - Aggregate functions , Date and Time functions , String functions
 Control   -Control Flow Statements, BEGIN…END, GOTO, IF…ELSE, WHILE

Unit 4   VIEW, JOIN and DATA CONSTRANTS in SQL 2008   L : 10 M: 08

Constraints - Data Integrity ,Entity Integrity
Keys   - PRIMARY KEY, UNIQUE ,FOREIGN KEY, CHECK
Views   - Create , Alter, Drop
 Join   - Joins, Cross Join, Inner Join, Outer Join, Self-Join
 Statement   - MERGE Statement

Unit 5 STORED PROCEDURES   L : 14 M: 08

Benefits of Stored Procedures
Types of Stored Procedures - System Stored Procedures ,User-Defined Stored Procedures
Creating and Altering Stored Procedure
Indexing:-Creating an Index, Optimizing the Index Performance, Removing the Index

Unit 6 TRIGGERS   L : 06 M: 06

Introduction, Triggers Vs constraints, DML Triggers, DDL Triggers,

Unit 7 ERROR HANDLING   **L : 06 M: 04**

Introduction Error Handling,
Function: - Using the @@ERROR Function,
Statement: - RAISERROR, TRY…CATCH Statement

REFERENCE BOOKS:

1) Kogent Learning Solution Inc., Simple Steps in SQL Server 2008,. , ISBN 9788177229554
2) Jeffrey Shapiro, The complete Reference SQL Server 2008, TMH
3) SQL Server 2008 Black book, BPB Publishers

Unit 1 Introduction   L:6,M:4

    1.1 What is System Software?
    1.2 Goals of System Software
    1.3 System Programs and Systems Programming
    1.4 View of System Software

Unit 2   Software Tools   L:6,M:4

    2.1   What is a Software Tools
    2.2 Software Tools for Program Developments
    2.3 Editors
    2.4 Debug Monitors
    2.5 Programming Environments

Unit 3 Overview of Language Processors   L:10,M:6

    3.1 Programming Languages and Language Processors
    3.2 Language Processing Activities
    3.3   Fundamentals of Language Processing

Unit 4 Compiler   L:12,M:8

    4.1 What is Compiler
    4.2 Scanning and Parsing
    4.3 Programming Language Grammars
    4.4 Scanning
        4.4.1   Parsing
    4.5 Language Process Development

 Unit 5 Assembler   L:12,M:8
    5.1 Elements of Assembly Language Programming
    5.2 A simple Assembly Scheme
    5.3 Pass structures of Assemblers
    5.4 Design of a Two Pass Assembler

 Unit 6 Macro and Macro Preprocessor   L: 8, M: 6
    6.1 Macro Definition and Call

6.2 Macro Expansion
6.3 Nested Macro Calls
6.4 Advanced Macro Facilities
6.5 Design of Macro Processor

Unit 7 Linkers and Loaders   L: 6, M: 4
    7.1 Introduction
    7.2 Relocation and Linking Concepts
    7.3 Self Relocating Programs
    7.4 Linking for Overlays
    7.5 Dynamic Linking
    7.6 Loaders

Reference:
1. D.M. Dhamdhere, Systems Programming
2. D.M. Dhamdhere, Systems programming and operating system.
3. John Donovan, System programming.
4. Alfred V Aho, Ravi Sethi, Jeffery D. Ullman, Compilers Principals, Techniques
And tools, Pearson education, Delhi, 2008.

North Maharashtra University, Jalgaon
T. Y. B. Sc. (Information Technology)
(w.e.f. June -2014)

Operating System (UG-IT-322)
Semester-II

Unit 1 Introduction   L:06 M:06
1.1 What is an operating system?
1.2 Types of Operating System
1.3 Services of Operating System
1.4 Functions of operating system.

Unit 2 CPU scheduling   L:12 M:10
2.1 Multiprogramming Concepts
2.2 Basic Concept of CPU scheduling
2.3 Scheduling Algorithms

Unit 3 Memory Management   L:12 M:10
3.1 Logical versus Physical Address space
3.2 Swapping
3.3 Multiple partition allocation MFT , MVT
3.4 Paging
3.5 Segmentation

Unit 4 Disk and Drum Scheduling   L:06 M:04
4.1 First Come first serve scheduling
4.2 Shortest Seek Time First Scheduling
4.3 SCAN Scheduling
4.4 C-SCAN Scheduling

Unit 5 Deadlocks   L:10 M:06
5.1 Concept of Deadlock
5.2 Deadlock Characterization
5.3 Deadlock Prevention
5.4 Deadlock Avoidance
5.5 Deadlock Detection
5.6 Recovery from Deadlock

6 Overview of Android Operating System   L:06M:04
   6.1 What is Android?
   6.2 Android Architecture
   6.3 Features of Android OS
   6.4 Applications of Android
   6.5 What is Google Play Store?

Reference books:

1. Peterson Silberschatz, Operating system concepts. Addison Wesley.
2. Andrew S. Tanenbaum, Modem operating system, P .H.I. New Delhi
3. Marko Garaenta, Learning Android, O'Realay
4. Android Developers Tools essentials, O'Realay.
North Maharashtra University, Jalgaon

Unit 1 Fundamentals of Communication   **L-10 M- 08**

      1.1 Concept of data communication

          1.1.1 Transmission Characteristics

          1.1.2 Asynchronous & Synchronous Transmission

      1.2 Basic terms & concepts

          1.2.1 Messages, Headers & Codes

          1.2.2 Session & Communication model – Encoder, Channels, Decoder, Signal Processing

Unit 2. Major Communication in data communication system   **L-10 M- 08**

      2.1 Transmission Path

          2.1.1 Twisted Pair Cable

          2.1.2 Co-axial Cable

          2.1.3 Submarine Cable

          2.1.4 Optical Fibers

          2.1.5 Comparison of Wire Pair & Co-axial Cable

          2.1.6 Satellite Communication & Microwaves

      2.2 Modems

          2.2.1 Modulation Technique

          2.2.2 Amplitude Modulation

          2.2.3 Phase Modulation

          2.2.4 Frequency Modulation

          2.2.5 Pulse Code Modulation

Unit 3.   Switching & Multiplexing   **L-10 M- 08**

      3.1 Switching

          3.1.1 Circuit Switching

          3.1.2 Message Switching

          3.1.3 Packet Switching

      3.2 Multiplexing & de-Multiplexing

          3.2.1 Line Sharing & Compression

          3.2.2 Concentrators

          3.2.3 Data Compression

Unit 4. Error Correction & Detection   **L-10 M- 10**

      4.1 Types of Errors

          4.1.1 Single-Bit Error

          4.1.2 Burst Error

      4.2 Error Detection

          4.2.1 Redundancy

          4.2.2 Parity Check

4.2.3 Cyclic Redundancy Check (CRC)
4.2.4 Checksum
4.3 Error Correction
4.3.1 Hamming Cod

Unit 5. Data Communication Services   **L-10 M- 6**
5.1 Switched Multi megabit Data Service
5.2 X.25 N/W
5.3 Frame Relay
5.4 Bluetooth Architecture and Application

References:
1. Data Communication & Distributed Networks, By U.D. Black, Second Edition ,
2. Computer Networks, By Andrew S. Tanenbaum,Second andFourth Edition
3. Data Communication & Networking, By Behrouz A. Forouzan,Third Edition

North Maharashtra University, Jalgaon

Unit 1.   Introduction   L-10 M- 08
1.1. Application of Network
1.2. Network Structures
    1.2.1. Point-to-point Channel
    1.2.2. Broadcast Channel
    1.2.3. Topologies - Star, Tree, Bus, Ring, Mesh, Fully Connected.
1.3. Protocol Hierarchy
    1.3.1. Layers, Protocols & Interfaces
    1.3.2. The OSI Reference Model

Unit 2. The Physical Layer   L-10 M- 06
2.1. The telephone System
    2.1.1. ISDN – Introduction & Architecture
2.2. Wireless Transmission
    2.2.1. Electromagnetic Spectrum
    2.2.2. Radio Transmission
    2.2.3. Microwave Transmission
    2.2.4. Infrared & Millimeter Waves
    2.2.5. Light wave Transmission

Unit 3. The Data link Layer   L-10 M- 10
3.1. Design Issues of DLL
    3.1.1. Services Provided to Network Layer
    3.1.2. Framing
    3.1.3. Error Control & Flow Control
3.2. Elementary Data Link Protocol
    3.2.1. An Unrestricted Simplex Protocol
    3.2.2. A Simplex Stop & Wait Protocol
3.3. Sliding Window Protocol
    3.3.1. One Bit Sliding Window Protocol
    3.3.2. Protocol Using Go-Back N

Unit 4. The Network Layer   L-10 M- 08
4.1. Services Provided to Transport Layer
4.2. Routing Algorithm
    4.2.1. Shortest Path
    4.2.2. Multicast Routing
4.3. Congestion Control
    4.3.1. Introduction to Congestion Control
    4.3.2. IS arithmetic Congestion Control
    4.3.3. Deadlocks

Unit 5. Network security   L-10 M-08

5.1 Firewalls: concept, design principles, limitations

5.2 IP security:

    5.2.1 Overview, architecture, IPSec, IPSec configurations, IPSec security

5.3 Virtual Private Network

5 4 Email security:

    5.4.1 Email security standards: Working principle of SMTP, PEM, PGP, S/MIME, spam

References:

1. Computer Networks, By Andrew S.Tanenbaum, Fourth Edition
2. Data Communication & Networking, By Behrouz A. Forouzan, Third Edition
3. Network Security, By Atul Kahate

North Maharashtra University, Jalgaon

Unit 1. INTRODUCTION TO JAVA   L-10, M-08

Java as programming tool , Advantages of Java - Simple, object oriented Distributed, Robust, Secure, Architecture neutral, Portable, Interpreted, High Performance, Multithreading, dynamic. Java and Internet, Variables, Data Types, Operators, Arrays, Casting, Compiling and running java program, Command line argument.

Unit 2. OBJECTS AND CLASSES   L-08,M-06

Introduction - Classes, Objects, Data members, methods, Use of existing classes, Constructors and Types, Overloading, Packages.

Unit 3. FUNCTIONS IN JAVA   L-06, M-06

String functions - Concatenation, Substring, String editing, Testing for Equality, character extraction function – CharAt, getChars, getByte , Formatting functions, Date and Time functions using Gregorian Calendar Class.

Unit 4. INHERITANCE   L-13, M-10

Inheritance, Inheritance Hierarchy, Super class, Overriding, Polymorphism, Access modifier, Wrapper classes, Reflection - 'Class' class, Interfaces, Inner classes, Abstract Classes.

Unit 5. EXCEPTION HANDELING   L-06, M-04

 Dealing with errors ,Types of exceptions, How to throw the Exception, Catching Exceptions.

Unit 6. STREAMS & FILES   L-06 M-06

 Streams, The complete stream family - Layering stream files, Data stream, random access file stream, Putting stream to use - writing delimited output, String Tokenizers & delimited input, Object streams.

References:-
1. Cay's Horstmann and Gary Cornell. Core Java Volume -1 Fundamentals
2. E. Balaguruswamy (Tata Mc Graw Hill) Programming with Java – A primer
 3.Herbert Schildt (TMH) The complete reference JAVA-2 Fifth Edition
4. Java 6 Programming Black Book

North Maharashtra University, Jalgaon
T. Y. B. Sc. (Computer Science)
JAVA Programming II (UG-IT-324)
Semester-II

Unit 1. APPLETS   L-06, M-06

Applet basics -Simple applets, testing applets, security basic, converting application to applets, life cycle of applet, the applet HTML, tags & attributes.

Unit 2. GRAPHICS PROGRAMMING   L-07, M-07

Introduction, frames, frame layouts, Displaying information in a frame, Graphics objects and paint component method, Text and Fonts, Colors, Drawing Shapes, Filling Shapes, Paint mode and Images.

Unit 3. EVENT HANDLING   L-12, M-08

Basic Event Handling, The AWT event hierarchy, event handling summary, low level events - Focus, window, keyboard, mouse events, Multicasting, event sources and listener, adapter classes.

Unit 4. USER INTERFACE COMPONENTS USING SWING   L-12 M-08

 Introduction to layout management - Panels, Border Layout, Grid Layout, Text Input- Text Field, Input validation, password field, Labels and Labeling components , selecting text, Editing Text, Making choices - Check boxes, Radio buttons, List, Combo boxes, Border, Scrollbars - Scroll panes, Scrolling window, Menus - Building menus, Reacting to menu events, Icons in item menus, checkbox and radio button, menu items, Popup menu, Keyboard mnemonics and Accelerators, enabling and Disabling menus, dialog boxes - opening dialogs using inbuilt dialog box

Unit 5. MULTITHREADING   L-06,M-06

What are threads? Interrupting Threads, Thread states, Thread priority, Synchronization.

Unit 6. INTRODUCTION TO ADVANCED JAVA   L-06 M-06

Introduction to JDBC, JavaBeans, Servelets, JSP, CORBA.

References:-
1. Cay's Horstmann and Gary Cornell Core Java Volume -1 and Volume 2
2. Deitel & Deitel, "Java How to program", Prentice Hall
3. Herbert Schildt (TMH) The complete reference JAVA-2 Fifth Edition
4. E. Balaguruswamy (Tata Mc Graw Hill) Programming with Java – A primer
5. Java 6 Programming Black Book

North Maharashtra University, Jalgaon
TYBSc (Information Technology) (w.e.f June 2014)
Cyber Law and IT ACT (UG-IT-315)
Semester – I

Unit 1. Basic Terms and Introduction   L-8   M-6

1.1 Cyber world, Cyber Space, Cybernetics, Electronic Data Interchange (EDI).
1.2 E–governance, E–commerce.
1.3 B2B, B2C, & C2B, C2C,G2B (Government to Business),G2C (Government to Citizens)

Unit 2. Cyber Crime   L-10 M-8

2.1. Concept of Cyber Crimes – Categories of cyber crime, Types of Cyber crimes.
2.2 Viruses, worms, software piracy.
2.3 Web jacking, Web Defacement, Cyber Stalking, Cyber Pornography.
2.4 Hacking, Phishing, e-fraud, threatening email, Cyber Terrorism.

Unit 3. Cyber Laws and Security   L-12 M-8

3.1 Introduction to Cyber Law
3.2 Definition, Objectives of Cyber Law, Need Scope.
3.3 Copyright issues in Cyberspace, Data encryption, Cryptography, Digital Signatures.
3.2 Password, Encrypted smart card, Bio-metric, firewall.
3.3 Information Security Management System and other Security Compliances.

Unit 4. Information Technology Act   L-12 M-12

4.1. Background of Information Technology Act 2000
4.2. Preliminary, Definitions, amendments.
4.3 Authentication of electronic records, Legal recognition of electronic records.
4.4 Legal recognition of digital signatures, Attribution, Regulation of Certifying Authorities.
4.4. Acknowledgment and Dispatch of electronic records.
4.5. Secure records and secure digital signatures,
4.6. Functions of controller, Duties of Subscribers, Penalties and Offences.

Unit 5. Intellectual Property Rights   L-8 M-6

5.1 Introduction
5.2 Objects of copyright
5.3 Requirement and Meaning of copyright
5.4 Copyright as bundle of rights, Framing
5.5 Linking & infringement
5.6 Information Technology act related to copyright

Reference Books:

1) Cyber Laws Dr Gupta & Agrawal , Premier publishing Company
2) Cyber Law simplified – Vivek Sood ,Tata MaGraw-Hill
3) Nature of Cyber Laws S.R. Sharma , Anmol Publications
4) Dimensions of Cyber Crime S.R. Sharma, Anmol Publications

5) Computer Forensics & Cyber Crimes Marjie Britz (pearson)

6) e-Commerce - Concepts, Models, Strategies, by C S V Murthy Himalaya Publishing House

7) Basics of e-Commerce- Legal and Security Issues ISBN 81-203-2432-3

8) e-Commerce : An Indian Perspective 2nd Edition P T Josheph SJ Electronic Commerce: Elias M Awad, Pearson Education

Unit 1 Software Engineering   M 08 L 10
    1.1 Definition
    1.2 Software Process
    1.3 Software Characteristics
    1.4 Software Development Life Cycle(SDLC): Requirements, Feasibility Study,
       Analysis, Design, Coding, Testing, Implementation and Maintenance.

Unit 2 Software Life Cycle Models   M 06 L08
    2.1 Waterfall Model
    2.2 Prototype Model
    2.3 Spiral Model
    2.4 Rapid Application Development(RAD)

Unit 3 Software Design   M 08 L 10
    3.1 What is design.
    3.2 Objectives of design
    3.3 Modularity: Module coupling, Module Cohesion, Relationship between
       coupling and cohesion.
    3.4 Strategy of design : Bottom up, Top down and Hybrid
    3.5 Data Flow Diagram(DFD), levels in detail
    3.6 Data Dictionary

Unit 4 Software Quality   M 04 L 08
    4.1 Quality concept
    4.2 Software Quality Assurance(SQA)
    4.3 Quality Standards

Unit 5 Coding and Testing   M 06 L 10
    5.1 Structured Programming
    5.2 Programming Style
    5.3 Internal Documentation
    5.4 Testing
                5.4.1   Definition
                5.4.2   Testing objective

Unit 6 Software Maintenance   M 04 L 08
    6.1 Definition
    6.2 Types of Maintenance
    6.3 Problems during maintenance
    6.4 Solution to maintenance problem
    6.5 Maintenance process

      7.1 Attributes of web based application
      7.2 The WebE process
      7.3 Framework for WebE Design
      7.4 Testing for Web based application

References:

1. Software Engineering(3 edition) by K.K. Aggarwal, Yogesh Singh, NEW AGE INTERNATIONAL PUBLISHERS
2. Software Engineering A practitioners Approach(6th Edition) Roger S. Pressman Mc GRAW HILL INTERNATIONAL EDITION.
3. Software Engineering by Rajib Mall, PHI PUBLICATION.

North Maharashtra University, Jalgaon
T. Y. B. Sc. (Information Technology)
(w.e.f. June -2014)
Programming in PHP (UG-IT-316)
Semester I

UNIT- 1Introducing PHP   **L:4 M:4**
 1.1 History
 1.2 Features and Drawbacks of PHP scripting.
 1.3 Installation Prerequisites – PHP, Apache on Linux, IIS on Windows.

UNIT- 2 PHP Basics   **L:16 M:10**

 2.1 Embedding PHP Code in Your Web Pages
 2.2 Commenting Your Code
 2.3 Outputting Data to the Browser
 2.4 PHP's Supported Datatypes
      2.4.1 Scalar Datatypes
      2.4.2 Compound Datatypes
      2.4.3 Converting Between Datatypes Using Type Casting
 2.5 Identifiers,Variables,Constants,Operators
 2.6 String Interpolation
 2.7 Control Structures
 2.8 Iterations

UNIT- 3 Functions   **L:6 M:6**

 3.1 Invoking a Function
 3.2 Creating a Function
 3.3 Passing Arguments by Value
 3.4 Passing Arguments by Reference
 3.5 Default Argument Values
 3.6 Returning Values from a Function
 3.7 Recursive Functions
 3.8 Function Libraries

UNIT- 4 Object-Oriented PHP   **L:8 M:6**

 4.1 The Benefits of OOP
 4.2 Key OOP Concepts
 4.3 Constructors and Destructors
 4.4 Static Class Members

UNIT- 5 Working with Files   **L:8 M:6**

 5.1 The Concept of a Resource
 5.2 Recognizing Newline Characters
 5.3 Recognizing the End-of-File Character

5.4 Opening and Closing a File
5.5 Reading from a File
5.6 Writing a String to a File

UNIT- 6 PHP and Web Forms   **L:8 M:4**

6.1 Understanding basic PHP and Web form concepts
6.2 Passing form data to PHP functions
6.3 Working with multivalued form components

UNIT- 7 Using PHP with MySQL   **L:10 M:4**

7.1 Setting Up and Tearing Down the Connection
7.2 Handling Connection Errors
7.3 Interacting with the Database
7.4 Sending a Query to the Database
7.5 Retrieving Data
7.6 Inserting, Updating, and Deleting Data

References Books -
1. Beginning PHP and MySQL, 3rd Ed., W. Jason Gilmore, Apress Publication.
2. PHP 5.1 for Beginners, Ivan Bayross and Sharnam Shah, SPD Publication
3. Beginning PHP5 Dave Mercer et al. Wrox Press

Websites –
1. http://www.php.net
2. http://www.w3c.org

North Maharashtra University, Jalgaon
T. Y. B. Sc. (Information Technology)
(w.e.f. June -2014)
Linux Operating System (UG-IT-326)
Semester-II

UNIT- 1 Introduction to Linux Operating System   **L 08 M 04**

 1.1 Introduction
 1.2 History of Linux
 1.3 Applications
 1.4 Linux Desktop Environments
      1.4.1 X-Windows,Window Manager,X Servers,Motiff
      1.4.2 GNOME, KDE , CDE.
1.5 Files and Directory Structure.

UNIT- 2 Basic Linux Commands and Editors   **L 10 M 08**

2.1 Commands and Parameters,
2.2 pwd, cd, ls, su, more, less, head, tail, cat, echo, clear, kill, find, grep, man,
xman.
2.3 Introduction to editors vi,emacs

UNIT- 3 Introduction to Shell Programming   **L 12 M 08**

3.1 Overview of Shells : sh, bash, csh, ksh and tcsh.
3.2 Shell Programming.
3.3 Variables
3.4 Conditional Statements (if, Case)
3.5 Iterative Statements (for, while, until)
3.6 Creating and Running shell programs

UNIT- 4 gawk programming   **L 12 M 10**

4.1 Introduction to gawk
4.2 Files, Records and Fields.
4.3 Pattern-action pairs
4.4 Calling gawk programs,
4.5 Control Structures: if statement
4.6 Iterative statements: for statement, while statement.
4.7 Arrays.

UNIT- 5 C Programming using Linux   **L 08 M 06**

5.1 Introduction
5.2 The GNU C Compiler
5.3 Debugging GCC Programs with GDB
5.4 C programming Tools.

UNIT- 6 Linux System Administration   **L 06   M 04**

6.1 User Management, Group Management
6.2 Logs and System Startup
6.3 Introduction to Wabi, Working of Wabi.

References:
1. Linux Unleashed - By Tim Parker Publication: Tecmedia.
2. Mastering Linux - By Arman Danesh Publication: BPB.

JAVA Programming –I (UG-IT-LAB- 301)

Semester-I

1. Write a program in Java to print prime numbers in a given range.
2. Write a program in Java to print factorial of given number using recursion
3. Write a program in Java to print fibonacci series in given series
4. Write a program in Java to demonstrate command line arguments.
5. Write a program in Java to demonstrate use of array
6. Write a program in Java to implement user defined package.
7. Write a program in Java to demonstrate various operations on string.
8. Write a program in Java to demonstrate wrapper classes.
9. Write a program in Java to demonstrate abstract class.
10. Write a program in Java to implement inheritance.
11. Write a program in Java to demonstrate inner class.
12. Write a program in Java to demonstrate exception handling.
13. .Write a program in Java to demonstrate text stream object that take input from user & write it into text file.

JAVA Programming –II (UG-IT-LAB- 301)
Semester-II

1. Write a program in Java to display messages in various fonts in a frame using applet
2. Write a program in Java to draw various geometric shapes like circle, line, rectangle etc using applet.
3. Write a program in Java to demonstrate paint mode using applet.
4. Write a program in Java to demonstrate window events using frame.
5. Write a program in Java to demonstrate Mouse events using frame.
6. Write a program in Java to demonstrate Keyboard events.(key pressed, key released) using frames
7. Write a program in Java to demonstrate multicasting using frames
8. Write a program in Java to demonstrate user interface component list boxes and combo box.
9. Write a program in Java to demonstrate user interface component radio button and check box.
10. Write a program in Java to demonstrate menus as interface component.
11. Write a program in Java to demonstrate multithreading.
12. Write an Applet to display human face.
13. Write a program in Java to demonstrate Java Applet with parameter

North Maharashtra University, Jalgaon
T. Y. B. Sc. (Information Technology)
Lab on- Programming in PHP & Linux Operating System
UG-IT-LAB- 302

Semester-I

1. Write a PHP script to demonstrate different String functions.
2. Write a PHP script to demonstrate different Control Statements.
3. Write a PHP script to demonstrate different Looping Statements.
4. Write a PHP script to use Functions (Call by Value, Call by reference).
5. Write a PHP script to demonstrate use of Class.
6. Write a PHP script to demonstrate the concept of Constructor & Destructor.
7. Write a PHP script to demonstrate File Handling.
8. Write a PHP script to demonstrate Form Data Handling.
9. Write a PHP script to demonstrate Insertion, Deletion & Updation of databases.
10. Write a PHP script to demonstrate Data retrieval.

Semester-II

1. Demonstrate working with Linux Commands.
2. Demonstrate working with Vi editor commands.
3. Write a Shell Program to check whether given no. is Palindrome or not.
4. Write a Shell Program to print a Fibonacci series up to given number.
5. Write a Shell Program to find GCD of given numbers.
6. Write a gawk programs to create a text file "odd" containing only odd pages and file "even" containing only even pages from input file.
7. Write a gawk program to print GCD, LCM of two numbers.
8. Write a C program to check whether given number is Prime or not.
9. Write a C program to print factorial of a given number.
10. Write a C program to check a given number is Armstrong or not.

LAB on System Programming (UG-IT-LAB 303)

Semester-I

1. To create line editor with features like create a new file, open existing file,Append in the file, Save and print file as well as to insert, delete, copy & move Lines in the file.

2. Write a program to isolate each lexical unit of source program statement and Create Descriptor.
3. Write lexical analyzer to remove blanks and tabs.
4. Write lexical analyzer to deleting comments.
5. Simulate CPU for SMAC0 (Small Computer)
6. SMAC0 Programming:
   a. Addition, Subtraction of two numbers
   b. Multiplication , Division of two numbers
   c. GCD and LCM of two numbers
   d. Factorial of given number
   e. Square & Cube of a given number
   f. Fibonacci series
      (Do not use op-codes for MULT, DIV operation)
7. Interrupt handler in C
(Keyboard interrupt should be disabled and alt-C should be used to toggle CAPS Lock and Alt- N should be used to toggle NUM lock)

Semester II

Lab on SQL Server

1. Create database and table and use of DML statements.
2. Defining different types of database constraint.
3. Manipulation of data in tables
4. Query based on operators and joins
5. Simple and nested query
6. Write and execute stored procedures and triggers
7. Write and execute DML & DDL triggers
8. Demonstrate the Use of @error & RAISE-ERROR