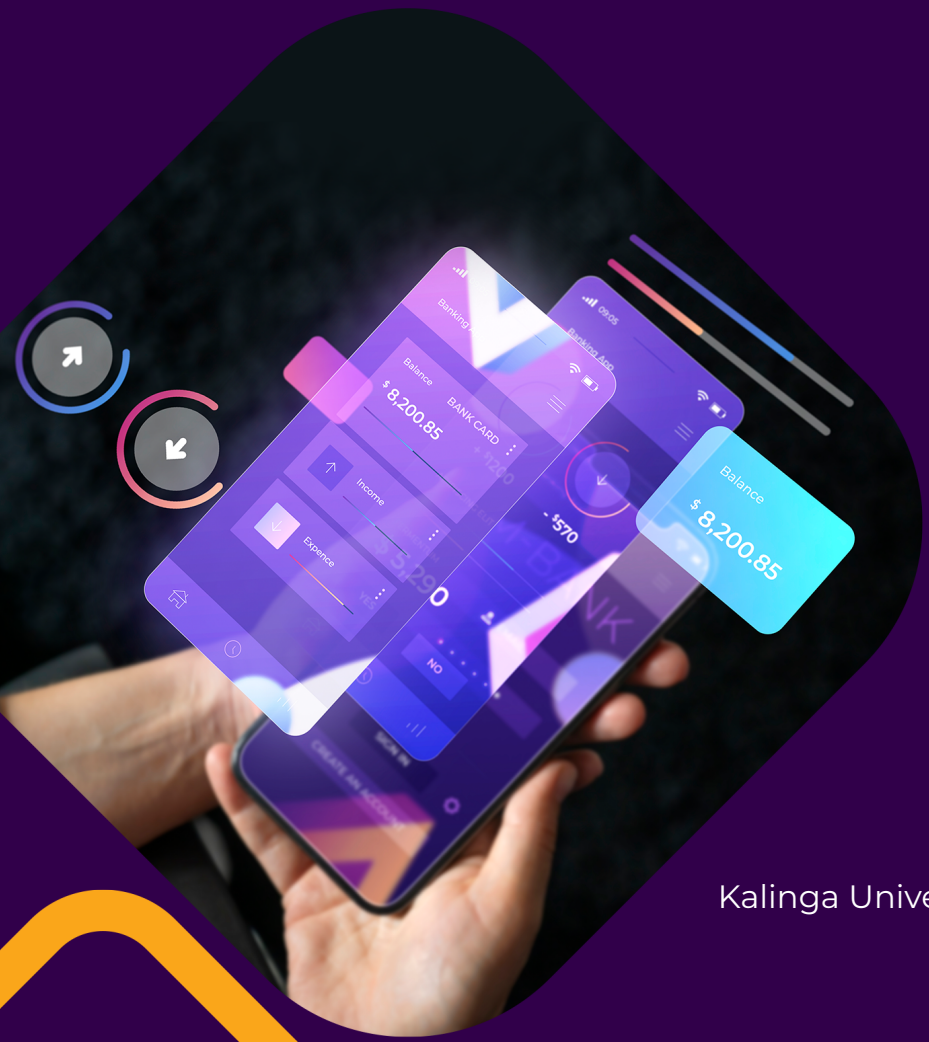
KALINGA UNIVERSITY

RAIPUR | INDIA

SCHEME & SYLLABUS FOR

Bachelor of Vocational Studies (B.Voc.) Mobile Application Development



NAAC GRADE B+ Accredited University

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Kalinga University, Naya Raipur, Chhattisgarh

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B. VOC. IN MOBILE APPLICATION DEVELOPMENT

Semester - I							
Subject Code	**Subject**	**L**	**T / P**	**Credits**	**Internal Marks**	**External Marks**	**Total**
BVMAD101	Communication Skills	3	0	3	30	70	100
BVMAD102	Fundamentals of Information Technology	3	0	3	30	70	100
BVMAD103	C Programming	3	0	3	30	70	100
BVMAD104	Operating System Concepts	3	0	3	30	70	100
BVMAD105P	**Industrial Training/ On Job Training/ Workshop**	0	36	18	50	150	200
Total		**12**	**36**	**30**	**170**	**430**	**600**

Semester - II							
Subject Code	**Subject**	**L**	**T / P**	**Credits**	**Internal Marks**	**External Marks**	**Total**
BVMAD201	Object Oriented Programming using Java	3	0	3	30	70	100
BVMAD202	Environmental Studies	3	0	3	30	70	100
BVMAD203	Data Communication and Networking	3	0	3	30	70	100
BVMAD204	Data Structures	3	0	3	30	70	100
BVMAD205P	**Industrial Training/ On Job Training/ Workshop**	0	36	18	50	150	200
Total		**12**	**36**	**30**	**170**	**430**	**600**

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Semester - III							
Subject Code	**Subject**	**L**	**T / P**	**Credits**	**Internal Marks**	**External Marks**	**Total**
BVMAD301	Database Management Systems	3	0	3	30	70	100
BVMAD302	Cloud Computing	3	0	3	30	70	100
BVMAD303	Java Server Programming	3	0	3	30	70	100
BVMAD304	Wireless Networks	3	0	3	30	70	100
BVMAD305P	**Industrial Training/ On Job Training/ Workshop**	0	36	18	50	150	200
Total		**12**	**36**	**30**	**170**	**430**	**600**

Semester - IV							
Subject Code	**Subject**	**L**	**T / P**	**Credits**	**Internal Marks**	**External Marks**	**Total**
BVMAD401	Python Programming	3	0	3	30	70	100
BVMAD402	C# and .Net Programming	3	0	3	30	70	100
BVMAD403	Concept of Data Mining	3	0	3	30	70	100
BVMAD404	Mobile-Commerce & User-Centered Interface Design	3	0	3	30	70	100
BVMAD405P	**Industrial Training/ On Job Training/ Workshop**	0	36	18	50	150	200
Total		**12**	**36**	**30**	**170**	**430**	**600**

Semester - V							
Subject Code	**Subject**	**L**	**T / P**	**Credits**	**Internal Marks**	**External Marks**	**Total**
BVMAD501	Mobile Application Development using Android	3	0	3	30	70	100
BVMAD502	Web Technology	3	0	3	30	70	100
BVMAD503	Multimedia Tools and Applications	3	0	3	30	70	100
BVMAD504	Network Security	3	0	3	30	70	100
BVMAD505P	**Industrial Training/ On Job Training/ Workshop**	0	36	18	50	150	200
Total		**12**	**36**	**30**	**170**	**430**	**600**

Semester - VI							
Subject Code	**Subject**	**L**	**T / P**	**Credits**	**Internal Marks**	**External Marks**	**Total**
BVMAD601	Free and Open Source Software	3	0	3	30	70	100
BVMAD602	iOS Programming	3	0	3	30	70	100
BVMAD603	Software Testing	3	0	3	30	70	100
BVMAD604	Windows Mobile Application Development	3	0	3	30	70	100
BVMAD605P	**Industrial Training/ On Job Training/ Workshop**	0	36	18	50	150	200
Total		**12**	**36**	**30**	**170**	**430**	**600**

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SEMESTER-I
COMMUNICATION SKILLS
BVMAD101

Course Objective:

The purpose of this course is to introduce students to the theory, fundamentals and tools of communication and to develop in them vital communication skills which should be integral to personal, social and professional interactions. One of the critical links among human beings and an important thread that binds society together is the ability to share thoughts, emotions and ideas through various means of communication: both verbal and non-verbal. In the context of rapid globalization and increasing recognition of social and cultural pluralities, the significance of clear and effective communication has substantially enhanced.

Course outcome:

1. The purpose of this course is to introduce students to the theory, fundamentals and tools of communication
2. To develop vital communication skills which should be integral to personal, social and professional interactions.
3. One of the critical links between human beings.
4. An important thread that binds society together is the ability to share thoughts, emotions and ideas through various means of communication: both verbal and non-verbal.
5. In the context of rapid globalization and increasing recognition of social and cultural pluralities, the significance of clear and effective communication has substantially enhanced.

Contents

Unit I: Introduction: **06**

Theory of Communication, Types and modes of Communication, Mediums and channels of communication, barriers to communication, English as a Global language, the Lingua Franca, Social influences on English

Unit II: Language of Communication: **06**

Verbal and Non-verbal (Spoken and Written) Personal, Social and Business Barriers and Strategies Intra-personal, Inter-personal and Group communication, Varieties of English, Language, Accent, Dialect, Colloquialism, Historical influences on English

Unit III: Speaking Skills: **06**

Monologue Dialogue Group Discussion Effective Communication/ Mis- Communication Interview Public Speech, Regional influences on English, Convergence and divergence, Linguistic Imperialism,

Unit IV: Reading and Understanding- **06**

Close Reading, Reading analysis of a text - Audience and purpose, Content and theme, Tone and Mood, stylistic devices, structure Comprehension- Analysis and Interpretation Translation(from Indian language to English and vice-versa) Literary/Knowledge Texts

Unit V: Writing Skills **06**

Documenting Report Writing Making notes Letter writing, Writing tabloids, diary entry, open letters, essays, newsletter and magazine articles, skits, short stories, impersonating characters. It will enhance Language of communication, various speaking skills such as personal communication, social interactions and communication in professional situations such as interviews, group discussions and office environments, important reading skills as well as writing skills such as report writing, note taking etc. While, to an extent, the art of communication is natural to all living beings, in today's world of complexities, it has also acquired some elements of science. It is hoped that after studying this course, students will find a difference in their personal and professional interactions.

Reference Books:

1. Fluency in English - Part II, Oxford University Press, 2006.
2. Business English, Pearson, 2008.
3. Language, Literature and Creativity, Orient Blackswan, 2013.
4. Language through Literature (forthcoming) ed. Dr. Gauri Mishra, Dr. Ranjana Kaul, Dr. Brati Biswas

KALINGA UNIVERSITY
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FUNDAMENTALS OF INFORMATION TECHNOLOGY BVMAD102

Unit I: Computer characteristics **06**

Speed, storage, accuracy, diligence; Digital signals, Binary System, ASCII; Historic Evolution of Computers; Classification of computers: Microcomputer, Minicomputer, mainframes, Supercomputers; Personal computers: Desktop, Laptops, Palmtop, Tablet; Hardware & Software; Von Neumann model.

Unit II: Hardware **06**

CPU, Memory, Input devices, output devices. Memory units: RAM (SDRAM, DDR RAM, RDRAM etc. feature wise comparison only); ROM-different types: Flash memory; Auxiliary storage: Magnetic devices, Optical Devices; Floppy, Hard disk, Memory stick, CD, DVD, CD/DVD-Writer; Input devices - keyboard, mouse, scanner, speech input devices, digital camera, Touch screen Voice Input, Joystick, Optical readers, bar code reader; Output devices: Display device, size and resolution; CRT, LCD, LED; Printers: Dot-matrix, Inkjet, Laser; Plotters, Sound cards & speaker.

Unit III: Software **06**

System software, Application software; concepts of files and folders, Introduction to Operating systems, Different types of operating systems: single user, multitasking, time-sharing multi-user; Booting, POST; Basic features of two GUI operating systems: Windows & Linux (Basic desk top management); Programming Languages, Compiler, Interpreter, Databases; Application software: Generic Features of Word processors, Spread sheets and Presentation software; Generic Introduction to Latex for scientific typesetting; Utilities and their use; Computer Viruses & Protection, Free software, open source.

Unit IV: Computer Networks and Internet **06**

Connecting computers, Requirements for a network: Server, Workstation, switch, router, network operating systems; Internet: brief history, World Wide Web, Websites, URL, browsers, search engines, search tips; Internet connections: ISP, Dial-up, cable modem, WLL, DSL, leased line Wireless and Wi-Fi connectivity ; email, email software features (send receive, filter, attach, forward, copy, blind copy); characteristics of web-based systems, Web pages, Web Programming Languages.

Unit-V: Information Technology And Society **06**

Indian IT Act, Intellectual Property Rights, issues. Application of information Technology in Railways, Airlines, Banking, Insurance, Inventory Control, Financial systems, Hotel management, Education, Video games, Telephone exchanges, Mobile phones, Information kiosks, special effects in Movies.

Programming Concepts & Techniques: Program Concept, Characteristics of Programme, Stages in Program Development, Tips for Program Designing, Programming Aids, Algorithms, Pseudo code, Notations, Design, Flowcharts, Symbols, Rules, compiler & Interpreter. Introduction to programming techniques, Top-down & Bottom-up approach, Unstructured, & Modular programming, Cohesion, Coupling, Debugging, Syntax & Logical Errors, Linking and Loading, Testing and Debugging, Documentation.

Reference Books:

1. Programming in C, R.S. Salaria, Khanna Publishing House
2. Computer Concepts and Programming in C, R.S. Salaria, Khanna Publishing House
3. Handbook of Computer Fundamentals, N.S. Gill, Khanna Publishing House

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C PROGRAMMING
BVMAD103

Unit I: **06**

Introduction: The C Character Set – Identifiers and Keywords. Data Types – Constants – Tokens - Variables and Arrays – Declarations – Expressions – Statements – Symbolic Constants.

Operators and expressions: Arithmetic Operators – Unary Operators – Relational and Logical Operators– Assignment Operators – The Conditional Operator – Library Functions.

Unit II: **06**

Input and output statements: Single Character Input- getchar Function– Single Character Output – putchar Function – Entering Input Data- scanf Function – Writing Output Data – printf Function– Gets and Puts Function– Interactive Programming.

Control statement: If statement – If else.

Looping: For – While – do while – nested looping

Unit III: **06**

Functions: Defining a Function – Accessing a Function – Function Prototypes – Passing Arguments to a Function– Recursion.

Program structure: Storage Classes – Atomic Variables – Global Variables- Static Variables.

Arrays: Defining an Array –Processing an array - Passing Arrays to Functions – Multidimensional Arrays.

Unit IV: **06**

Strings: Defining a String – NULL Character – Initialization of Strings – Reading and Writing a String– Processing a String – Searching and Sorting of Strings.

Pointers: Pointer Declarations – Passing Pointers to a Function – Dynamic Memory Allocation and Array of Pointers.

Structures and unions: Definition of Structures – Processing a structure – Structure within structure User- Defined Data Types – Structures and Pointers – Passing Structures to Functions – Unions.

Unit V: **06**

File handling: Opening and Closing a File – Reading and Writing a Data File – Processing a Data File– Unformatted Data Files - Concepts of Binary Files.

Low level programming: Register Variables – Bitwise Operations – Bit Fields.

Additional features of C: Enumerations – Command Line Parameters.

Suggested Readings:

1. Byron Gottfried, “Programming with C”, McGraw Hill Education (India) Pvt Ltd., Third Edition, 2013.
2. YashavantKanetkar “Let us C”, BPB Publications, 9th Revised & Updated edition, Tata McGraw Hill, 2013.
3. Venugopal K.R, Sudeep R.P, “Programming with C”, Tata McGraw Hill, 2000.

KALINGA UNIVERSITY
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OPERATING SYSTEM CONCEPTS
BVMAD104

Unit I: **06**

Operating System Overview: Operating System Objectives and Functions –The Evolution of Operating System.

Process Description and Control: What is Process – Process States – Process Description – Process Control.

Unit II: **06**

Concurrency: Deadlock And Starvation: Principles Of Deadlock – Deadlock Prevention – Deadlock Avoidance– Deadlock Detection – An Integrated Deadlock Strategy.

Unit III: **06**

Memory Management: Memory Management Requirements – Memory Partitioning – Paging – Segmentation– Security Issues.

Unit IV: **06**

I/O Management And Disk Scheduling: I/O Devices – Organization of the I/O Function – I/O Buffering – Disk scheduling – RAID – Disk Cache.

Unit V: **06**

File Management: Overview – File Organization and Access – B-Trees – File Directories – File Sharing – Record Blocking – Secondary Storage Management – File System Security.

Suggested Reading:

1. William Stallings, Operating Systems, Pearson Education Inc., Seventh Edition, 2014.
2. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Concepts”, John Wiley and Sons Inc., Ninth Edition, 2012

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INDUSTRIAL TRAINING/ ON JOB TRAINING/ WORKSHOP BVMAD105P

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SEMESTER-II
OBJECT ORIENTED PROGRAMMING USING JAVA
BVMAD201

Course Objectives

- To understand the Object Oriented Programming concept.
- To work with files and handle exceptions.
- To understand JDBC connectivity.
- To develop interactive user interface using Java swing and Networking.

Unit I: **06**

An Overview Of Java: object-oriented programming - Lexical issues - Java class libraries

Classes : Class Fundamentals – Declaring objects – Assigning object reference variables – methods – Constructors – this keyword – Garbage collection – finalize() method – A stack class.

String Handling: The string constructors - String length - Special string operations - Character extraction - String comparison - Searching strings - Modifying a string - String buffer.

Inheritance: Inheritance basis – Using super – Creating a multilevel hierarchy – When constructors are called – Method overriding – Dynamic method dispatch – Using abstract classes – Using final with Inheritance – The object class.

Unit II: **06**

Packages & Interfaces: Packages, Access protection –Importing packages – Interfaces.

Exception Handling: Exception handling fundamentals -Exception types - Uncaught exceptions - Using try and catch - Multiple catch clauses - Nested try statements - throw - throws - finally - Java‟s built in exceptions – Creating your own exception subclasses – Using exceptions.

Multithreaded Programming: The java threads model -thread priorities - Synchronization – Interthread communication – Suspending, Resuming and Stopping threads.

Unit III: **06**

Input/Output: Files - Stream Classes - The Byte streams - The character streams - Using stream I/O.

The Collections Framework: Collections Overview: The Collections Interfaces-The List Interface-The Set Interface – The Queue Interface. The Collection Classes: The ArrayList Class-The LinkedList Class-The TreeSet class- The Priority QueueClass-The EnumSet Class

Unit IV: **06**

Applet Class – Applet Basics – Applet Architecture – An Applet Skeleton – Simple Applet Display Methods – Requesting Repainting –Using the status window - The HTML Applet tag – Passing parameters to applets.

Event Handling – The event handling mechanisms – The delegation event model – Event classes – Sources of events – Events listener interfaces – Using the delegation event model – Adapter classes –Inner classes.

Unit V: **06**

Swing – JApplet – Icons and Labels – Text Fields – Buttons – Combo Boxes – Tabbed Panes – Tables.

Networking: Networking Basics-Socket Overview-Client/Server-Reserved Sockets-Proxy Servers-Internet Addressing

References Text Book:

1. Herbert Schildt "The Complete Reference JAVA TM2", Mc-Graw Hill Limited, 8th Edition, 2011. (Unit I,II& IV,V)
2. Kogent Learning Solutions, "Java 6 Programming Black Book",Dreamtech Press 6th Edition. (Unit III)

Reference Book:

1. Patrick Naughton, Herbert Schildt, "Java 2: The Complete Reference", Mc Graw Hill Limited, 7th Edition.

KALINGA UNIVERSITY
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ENVIRONMENTAL STUDIES
BVMAD202

Unit I: Introduction to Environmental Studies **06**

- Multidisciplinary nature of environmental studies
- Scope and importance; Concept of sustainability and sustainable development.

Ecosystems

What is an ecosystem? Structure and function of the ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems:

a) Forest ecosystem
b) Grassland ecosystem
c) Desert ecosystem
d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit II: Natural Resources : Renewable and Non--renewable Resources **06**

- Land resources and landuse change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over--exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter--state).
- Energy resources : Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit III: Biodiversity and Conservation **06**

- Levels of biological diversity : genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega--biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity : Habitat loss, poaching of wildlife, man--wildlife conflicts, biological invasions; Conservation of biodiversity : In--situ and Ex--situ conservation of bi odiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit IV: Environmental Pollution **06**

- Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management : Control measures of urban and industrial waste.
- Pollution case studies.

Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

Unit V: Human Communities and the Environment **06**

- Human population growth: Impacts on environment, human health and welfare.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management : floods, earthquake, cyclones and landslides.
- Environmental movements : Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

Suggested Readings:

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R.1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999.*Global Ethics and Environment*, London, Routledge.
4. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll.*Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science,* 339: 36--37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams*(pp. 29--64). Zed Books.
8. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971.*Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012.*Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. *Tripathi 1992*.
14. Sengupta, R. 2003. *Ecology and economics*: An approach to sustainable development. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology*: *Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger*: *A Natural History of the Indian Subcontinent*.
18. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
19. Wilson, E. O. 2006.*The Creation: An appeal to save life on earth*. New York: Norton.
20. World Commission on Environment and Development. 1987.*Our Common Future*. Oxford University Press.

KALINGA UNIVERSITY
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DATA COMMUNICATION AND NETWORKING BVMAD203

Course Objectives:

- To understand the basic concept of Networks and the seven layers of OSI model.
- To understand and configure basic network using guided and unguided media.
- To know about how computers and terminals actually communicate with each other.
- To learn TCP/IP, UDP and other Internet Protocols.

Unit I **:06**

Data Communications And Networks: Data Communications - Networks - Internet - Protocols and Standards.

Network Models: Layered Tasks - OSI Model - Layers in the OSI Model - TCP/IP Protocol Suite – Addressing.

Physical Layer And Media: Data And Signals - Analog and Digital -Periodic Analog Signals- Digital Signals-Transmission impairment-Data Rate Limits-Performance.

Unit II: **06**

Digital Transmission: Digital-to-Digital Conversion - Analogto-Digital Conversion - Transmission Modes.

Analog Transmission: Digital-to-Analog Conversion - Analogto-Analog Conversion.

Bandwidth Utilization: Multiplexing.

Transmission Media: Guided Media - Unguided Media.

Unit III: **06**

Data Link Layer: Error Correction and Detection - Block Coding -Linear Block codes - Cyclic Codes - Checksum.

Data Link Control: Framing - Flow and Error Control -Protocols- Noiseless channels - Noisy channels - Point-to-Point Protocol.

Multiple Access: Random Access Aloha - Controlled Access -Channelization.

Wired LAN: Ethernet - IEEE Standards - Standard Ethernet - Fast Ethernet - Gigabit Ethernet.

Wireless LAN: IEEE 802.11 – Bluetooth

Unit IV: **06**

Network Layer: Logical Addressing - IPv4 Addresses -IPv6 Addresses.

Network Layer: Internet Protocol: Internetworking -IPv4 -IPv6 - Transition from IPv4 to IPv6.

Network Layer: Address Mapping, Error Reporting And Multicasting: Address Mapping - ICMP -IGMP - ICMPv6. DELIVERY,FORWARDING AND **ROUTING**:Delivery-Forwarding-Unicast Routing Protocols-Multicast Routing Protocols.

Unit V: **06**

Transport Layer: Process-to-Process Delivery - UDP - TCP .APPLICATION LAYER: DNS - Remote Logging - Electronic Mail -File Transfer -HTTP - SNMP Remote Logging, Electronic Mail, and File Transfer: Remote Logging – Electronic Mail – File Transfer.

WWW and HTTP: Architecture - Web Documents – HTTP.

Reference Text Books:

1. Behrouz A. Forouzan, “Data Communications and Networking”, Tata McGraw Hill Education Private Limited, Fifth Edition.

Reference Books:

1. 1.Andrew S. Tanenbaum , “Computer Networks”, PHI, Fourth Edition..
2. William Stallings, “Data and Computer Communications”, Pearson, Tenth Edition.

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DATA STRUCTURES
BVMAD204

Course Objectives:

- To understand the Basic Techniques of Algorithm analysis.
- To learn how the choice of data structures, algorithm and design methods impacts the performance of programs.
- To learn efficient searching and sorting techniques.
- To understand the concepts of data structures such as Stacks, Queues and Linked list.
- To know how to solve problems using data structures such as binary trees, heaps, binary search trees and writing programs for these solutions.

Unit I: **06**

Basic Terminology: Data structure, Time and space complexity – Array – Structures – Pointers – Matrices -

Sparse matrices - Application – String processing.

Unit II: **06**

Sorting: Bubble sort - Insertion sort - Selection sort - Merge sort - Radix sort - Quick sort - Time and Space complexity.

Searching: Binary search - Sequential search - Hashing.

Unit III: **06**

Linked List: Linked list - Dynamic memory allocation –Representation - Insertion, deletion and searching -Traversing in a list - Doubly linked list.

Unit IV: **06**

Stack: Stack – Linked stack – Application – Expression -Infix-Prefix-Postfix Conversion & Evaluation - Recursion.

Queue : Queue - Linked queue - Circular queue –Dequeue - Priority queue - Application.

Unit V: **06**

Trees: Binary trees-Traversal, BST-traversing, Insertion and deletion of nodes - AVL Search Trees introduction –

Application of all trees - Heap sort.

References Text Books:

1. Seymour Lipschutz – Schaum Series: “Theory and Problems of Data Structures”, TMH, New Delhi, special edition 2013.

Reference Books:

1. E.Balagurusamy-“Data Structures Using C”TMH,New Delhi,2013.
2. A.K.Sharma, “Data structures using C”, Second Edition, Pearson Education,2013.

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INDUSTRIAL TRAINING/ ON JOB TRAINING/ WORKSHOP BVMAD205P

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SEMESTER-III
DATABASE MANAGEMENT SYSTEMS
BVMAD301

Course Objectives:

- To learn the basics about the Databases and their structures.
- To learn Various Constraints that can be applied to Databases.
- To understand Basics of Structured Query Language, Normalization and PL/SQL.
- To learn Relational Databases, Cursor, Stored Functions, and Stored Procedures
- To learn Basic concepts of Trigger

Unit I: **06**

Introduction: Database system Applications -Purpose of Database Systems- View of Data- Database Languages -Database design- Database engine -Database and application ArchitectureDatabase Users and Administrators.

Relational Databases: Structure of Relational Databases - Database Schema -Key -Relational Query Languages – Relational Algebra.

Unit II: **06**

Database Design: Overview of design process- The Entity-Relationship Model, Complex Attributes, Mapping Cardinalities, Primary Key-Removing Redundant Attributes in Entity Sets -Reducing E-R Diagrams to Relational Schemas.

Relational Database Design: Features of Good Relational Designs -Decomposition Using Functional Dependencies- Normal Forms.

Unit III: **06**

Interactive SQL: Invoking SQL * plus Data manipulation in Database Management Systems – Oracle Data Types – Two Dimension Matrix Creation, Insertion of data into tables, Updating the contents of a table – Deletion operations, The many faces of the Select command - Modifying the structure of the tables – Removing/Deleting/Dropping tables -Data constraints Computations in expression Logical operators - Range searching – Pattern matching - Oracle functions – Grouping data from tables in SQL - Manipulating dates in SQL Operators – Joins - Sub queries.

Unit IV: **06**

Using the Union, Intersect and Minus Clause: Indexes –Views –Sequences - Granting permissions - Revoking the permissions given - Creation of reports in SQL* plus.

PL/SQL: Introduction - Execution Environment - PL/SQL syntax - Understand the PL/SQL structure-

ORACLE Transactions: Commit - Rollback Save point- Cursors.

Unit V: **06**

Stored Procedures: Introduction -Creating Stored Procedures - An application using a Procedure Deleting a Stored Procedure.

Stored Functions: Introduction- Advantages of Functions - Creating a Stored Function - An application using a Function-Deleting a Stored Function.

Database Triggers: Types of Triggers -Creating Triggers -Deleting Triggers.

Text Books:

1. Silberschatz A, Korth H F, S.Sudarshan “Database System Concepts”, McGrawHill Publishing Company, Seventh Edition, 2020 (Unit I & II)
2. Ivan BayRoss, “Commercial Application Development Using ORACLE Developer 2000”, BPB Publication, New Delhi, 2007 (Unit III, IV & V)

Reference Books:

1. Ramez Elmasri, Shamkant B.Navathe, “Fundamentals of Database Systems”, Pearson Education, Fifth Edition, 2008.
2. Raghu Ramakrishnan, Johannes Gehrke, “Database Management Systems”, McGraw Hill Education, 2003.

KALINGA UNIVERSITY
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CLOUD COMPUTING
BVMAD302

Course Objectives

- Understand the concept of cloud computing.
- Familiarize the evolution of cloud from the existing technologies.
- Provide knowledge on the Virtualization in Cloud
- Be familiar with the Security Issues and challenges in Cloud computing and Web Services in Cloud

Unit I: **06**

Cloud computing – An Overview: Introduction –History of cloud computing –Characteristics of cloud – Cloud computing model –Issues and Challenges for Cloud Computing – Advantages and Disadvantages of cloud computing – Security, Privacy and trust –Threats to Cloud Computing.

Cloud Computing Architecture: Introduction - Cloud Architecture – Cloud computing models – Deployment models – Identity as a service

Unit II: **06**

Virtualization in Cloud: Introduction - Virtualization – Implementation of Virtualization - Virtualization support at the OS level – Middleware Support for Virtualization – Advantages of Virtualization – Application Virtualization - Virtualization implementation techniques – Hardware virtualization – Types of Virtualization – Load Balancing in Cloud Computing.

Unit III: **06**

Security Issues and challenges in Cloud computing: Introduction -Security challenges in Cloud computing– Information Security in Cloud computing – Security, Privacy and Trust.

Security Management: Introduction – Security reference architecture –Security Issues in cloud computing– Classification of security issues – Types of Attackers.

Unit IV: **06**

Web Services: Introduction – Amazon Web Services – AWS: Components and Services – Working of EC2– Benefits of EC2 – Microsoft Azure – Introducing Windows Azure – Cloud Services Provided by Azure – Azure Virtual Machines – Azure Storage – Azure Virtual Networks – Azure SQL Database – Azure Mobile Services– Google App Engine

Data Security and Privacy – Introduction – Data Security –Data Confidentiality – Data Integrity – Data Availability –Privacy – Challenges to privacy – Data Life-Cycle – Key Privacy Concerns in the Cloud– Responsibility of protecting Privacy – Transformation to Privacy Risk Management – Privacy by Design

Unit V: **06**

Cloud Computing Applications – Introduction – Business Applications – Benefits – Cloud Applications for Small Business - Finance and Banking Application – Challenges - Best Practices When Adopting Cloud - Benefits of Adopting Cloud – Legal and Compliance Issues – Reason for Adopting Cloud by Financial and Banking Services-Cloud Computing in Education – Current Education System – Implementation of Cloud Technology in Education System - Benefits of Cloud Computing for Education – Services Available to Educational Institutions – Risks of Cloud Computing – Change in Education System using Cloud Computing

Standards in Cloud Computing: Introduction-Standardization activities – Challenges – Fields of standardization- Standards in Cloud Computing Environments – Standardization Organizations in Cloud Computing.

Reference Text Book:

1. V.K.Pachghare, “Cloud Computing” , PHI, 2016.

Reference Books:

1. Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi, “Mastering Cloud Computing”, Tata Mcgraw Hill, 2013.
2. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing – A Practical Approach”, Tata Mcgraw Hill, 2009.
3. Kai Hwang, Geoffrey C. Fox, Jack G. Dongarra, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, Morgan Kaufmann Publishers, 2012

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JAVA SERVER PROGRAMMING BVMAD303)

Course Objectives

- To provide the necessary knowledge to design and develop dynamic,database-driven application using JSP.
- To gain knowledge on simple JSPs that use Java code in declarations, expressions and scriptlets.
- To learn the fundamentals of Java Server Pages and their relationship to servlets and J2EE.
- To know the various uses of XML in JSP applications.

Unit I: **06**

JSP Application Basics: Introducing Java Server Pages –HTTP and Servlet Basics – JSP Overview: The Problem with Servlets – The Anatomy of a JSP Page – JSP Processing –JSP Application Design with MVC

Setting up the JSP Environment: Installing the Java Software Development Kit – Installing the Tomcat Server –

Testing Tomcat

Unit II: **06**

JSP Application Development: Generating Dynamic Content – Using JavaBeans Components in JSP Pages –Using Custom Tag Libraries and the JSP Standard Tag Library- Bean - Declaring a Bean in a JSP Page – Reading Bean Properties – Setting Bean Properties.

Using Custom Tag Libraries and the JSP Standard Tag Library: Custom Tag Library – Installation – Declaration –Using Actions from a Tag Library Processing Input and Output: Reading Request Parameter Values – Validating the user Input – Formatting HTML

Output.

Unit III: **06**

Error Handling and Debugging: Dealing with Syntax Errors – Debugging a JSP Application – Dealing with Runtime Errors.

Accessing a Database: Accessing a Database from a JSP Page – Validating Complex Input without a Bean - Using

Transactions – Application – Specific Database Actions

Unit IV: **06**

Working with XML Data: Generating an XML Response –Transforming XML into HTML – Transforming XML into a Device-Dependent Format - Processing XML Data.

Using Scripting Elements: Using Page Directive Scripting Attributes – Implicit JSP Scripting Objects – Using Scriptlets– Using Expressions – Using Declarations – Mixing Action Elements and Scripting elements - Dealing with Scripting Syntax Errors.

Unit V: **06**

JSP in J2EE and JSP Component Development: Web Application Models : The JAVA2 enterprise Edition Model – The MVC Design Model – Scalability.

Combining JSP and Servlets: Servlets, Filters and Listeners – Picking the Right Component Type for Each Task –Initializing Shared Resources Using a Listener – Access control using a Filter – Centralized Request Processing using a Servlet – Using a Common JSP Error page.

Reference Text Book:

1. Hans Bergsten, “Java Server Pages”, O‟Reilly Third Edition, Shroff Publishers & Distributors Pvt.Ltd, 2007.

Reference Books:

1. Vivek Chopra, Jon Eaves, Rupert Jones, Sing Li, John T.Bell, “Beginning Java Server Pages”, Wiley Dreamtech Edition,Reprint 2007.
2. Ivan Bayross, sharanam Shah, Cynthia Bayross and Vaishali Shah, “Java Server Programming for Professions”, Shroff Publishers & Distributors Pvt.Ltd, 2007.

WIRELESS NETWORKS
BVMAD304

Course Objectives

- Study the working principles of wireless LAN, MAN, WAN and its standards.
- Understand the evolving wireless technologies and standards.
- Understand various protocols and services.
- Introduce the students to advanced network concepts, with emphasis on wireless technologies.
- To build working knowledge on various telephone and satellite networks

Unit I: **06**

Introduction: Wireless comes of Age-The Cellular Revolution-The Global Cellular Network – Broadband - Future Trends. Communication Networks: LAN, MAN and WAN – Switching Techniques – Circuit Switching – Packet Switching – Asynchronous Transfer Mode.

Spread Spectrum: The Concept of Spread Spectrum – Frequency Hopping Spread Spectrum – Direct Sequence Spread Spectrum – Code Division Multiple Access – Generation of Spreading Sequences.

Unit II: **06**

Satellite Communications: Satellite Parameters and Configurations – Capacity Allocation – Frequency Division – Capacity Allocation –Time Division.

Cellular Wireless Networks: Principles of Cellular Networks – First Generation Analog – Second Generation TDMA –Second Generation CDMA – Third Generation Systems.

Unit III: **06**

Cordless Systems and Wireless Local Loop: Cordless Systems –Wireless Local Loop – WiMAX and IEEE 802.16 Broadband Wireless Access Standards.

Mobile IP and Wireless Access Protocol: Mobile IP – Wireless Application Protocol.

Unit IV: **06**

Wireless LAN Technology: Overview – Infrared LANs – Spread Spectrum LANs – Narrowband Microwave LANs. Wi-Fi and the IEEE 802.11.

Wireless LAN Standard: IEEE 802 Protocol Architecture - IEEE 802.11 Architecture and services - IEEE 802.11 Medium Access Control.

Unit V: **06**

Wi-Fi and the IEEE 802.11 Wireless LAN Standard: IEEE 802.11 Physical Layer – Other IEEE 802.11 Standards.

Bluetooth and IEEE 802.15: Overview – Radio and Baseband SpecificationLink Manager Protocol-Logical Link Control and Adaptation Protocol- IEEE 802.15 501.

Reference Text Book:

1. William Stallings, “Wireless Communications & Networks”, Second Edition, Prentice Hall 2005

Reference Books:

1. Michael Miller, “Wireless Network”, Dorling Kindersley Publishers, First Edition, 2014.
2. Vijay K. Garg, “Wireless Communication & Networks” , Morgan Kaufmann Publishers (Imprint of Elsevier) 2009.

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INDUSTRIAL TRAINING/ ON JOB TRAINING/ WORKSHOP BVMAD305P

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SEMESTER-IV
PYTHON PROGRAMMING
BVMAD401

Course Objectives:

- To know and understand the basics of Python programming and decision statements
- To able to understand the control statements and functions
- To learn the concepts of strings and lists
- To use Python data structures – lists, tuples, dictionaries and sets
- To understand the concept of file handling

Unit I: **06**

Introduction: History of Python – Executing Python Programs –Commenting in Python – Internal Working of Python - Python Character Set – Token – Python Core Data Type – print() Function – Assigning Value to a Variable – Multiple Assignments – input() Function – eval() Function – Formatting Numbers and Strings –Python Inbuilt Functions – Decision Statements - Loop Control Statements.

Unit II: **06**

Functions: Introduction – Syntax and Basics of Function – Use of a Function – Parameters and Arguments in a Function – Local and Global Scope of a variable – return Statement – Recursive Functions – Lambda function.

Unit III: **06**

Strings: Introduction – str class – Basic Inbuilt Python Functions for String – Traversing String with for and while Loop –Immutable Strings – The String Operators – String Operations.

Lists: Introduction – Creating Lists – Accessing the Elements of a List – Negative List Indices – List Slicing - List Slicing with Step Size – Python Inbuilt Functions for Lists – List Operator – List Comprehensions – List methods – List and Strings – Splitting a String in List – Passing list to a function – Returning list from a function.

Unit IV: **06**

Object-Oriented Programming: Class, Objects and Inheritance: Defining Classes – Self-parameter and Adding

Methods to a Class – Display Class Attributes and Methods –Special Class Attributes – Accessibility – Passing an Object as Parameter to a Method – Method Overloading in Python –Operator Overloading – Inheritance – Types of Inheritance –Using super() – Method Overriding.

Tuples: Creating Tuples - tuple() Function - Inbuilt Functions for Tuples - Indexing and Slicing - Operations on Tuples - Passing Variable Length Arguments to Tuples - Lists and Tuples - Sort Tuples - Traverse Tuples from a List - zip() Function - Inverse zip(*) Function.

Sets: Creating Sets - Set in and not in Operator - Python Set Class - Set Operations

Unit V: **06**

Dictionaries: Need of Dictionaries - Basics of Dictionaries -Creating a Dictionary - Adding and Replacing Values - Retrieving Values - Formatting Dictionaries - Deleting Items - Comparing Two Dictionaries - Methods of Dictionary Class - Traversing Dictionaries - Nested Dictionaries - Traversing Nested Dictionaries.

File Handling: Introduction – Need of File Handling – Text Input and Output – seek( ) Function – Binary Files.

Reference Text Book:

1. Ashok Namdev Kamthane, Amit Ashok Kamthane, “Programming and Problem Solving with PYTHON”, McGraw Hill Education (India) Private Limited, First Edition, 2018.

Reference Books:

1. Allen Downey, Jeffrey Elkner, Chrish Meyers, “How to Think like a Computer Scientist- Learning with Python”, Dreamtech Press, Reprint Edition 2016.
2. Timothy A, Budd, “Exploring Python”. McGraw Hill Education (India) Private Limited, Tenth Reprint, 2017.
3. Peter Norton et al., “Beginning Python”, Wiley &Dreamtech Press, 2006

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C# AND .NET PROGRAMMING
BVMAD402

Course Objectives:

- To understand the .Net Frame work.
- To understand the Fundamental concepts of C#.
- To Build an Understanding of the Basic Controls of ASP.NET and Website Fundamentals.
- To understand ADO.Net connectivity

Unit I: **06**

Introduction to C#:- The .Net Framework Class Library – Basic Programming Techniques :- Namespaces and Types – Comments,Regions and Readability -Variables – Expression and Statements- Flow Control with Selection tatements – Iteration Statements.

Abstracting Ideas with Classes and Structs:-Defining Classes – Overloading.

Extensibility and Polymorphism:-Association Through Composition and Aggregation – Inheritance and Polymorphism – Replacing Methods in Derived Classes.

Dealing with Errors : - When and How to Fail – Returning Error Values – Exceptions.

Unit II: **06**

Arrays and Lists:-Arrays – Lists – Collection and Polymorphism.

Strings:- What is a String – The String and Chars Types – Literal Strings and Chars – Formatting Data for Output – Accessing Characters by Index – Strings are Immutable – Getting a Range of Characters –Composing Strings – Manipulating Text – Finding and Replacing Content – All Sorts of “Empty” Strings – Trimming Whitespace –Checking Character Types – Encoding Characters.

Unit III: **06**

The. NET Framework:- Common Language Infrastructure (CLI) and Common LanguageRuntime (CLR) - Common Type System (CTS) -Portions of the CLI - Modules and Assemblies - Application Domains -Common Language Specification (CLS) - Intermediate Language (IL) and Just-In-Time (JIT) Compilation.

Windows Forms I: Developing Desktop Applications:-Creating a Form - Handling Form Events - Relationships Between Forms.

Windows Forms II: Controls, Common Dialog Boxes, and Menus:-Common Controls and Components - Control Events - Form and Control Layout - Common Dialog Boxes – Menus - Creating a Control.

Unit IV: **06**

ASP.NET and Web Forms: Developing Browser-Based Applications:-Creating a Web Form - Handling Page Events - More About Server Controls - Adding Validation - Using Directives to Modify Web Page Compilation - ASP.NET Objects**:** Interacting with the Framework - Discovering Browser Capabilities - Maintaining State -Web-Application Security - Designing Custom Controls.

Web Services:- Creating a Web Service - Testing a Web Service with a Browser - Web-Service Descriptions - Consuming a Web Service -Web-Service Discovery - Limitations of Web Services.

Unit V: **06**

ADO.NET: Developing Database Applications:- Connecting to a SQL Server Database - Connecting to an OLE DB Data Source - Reading Data into a DataSet - Relations Between DataTables in a DataSet - The DataSet's XML Capabilities - Binding a DataSet to a Windows Forms DataGrid - Binding a DataSet to a Web Forms DataGrid - Typed DataSets - Reading Data Using a DataReader - Executing Stored ProceduresThrough a SqlCommand Object.

Reference Text Books:

1. Jesse Liberty, Ian Griffiths, Matthew Adams" Programming C# 4.0", O"Reilly Media Inc . Sixth Edition 2010.(Unit I ,II)
2. Dave Grundgeiger, "Programming Visual Basic .NET", O'Reilly First Edition January 2002(Unit III –V)

Reference Books:

1. Vikas Gupta, ".NET Programming Course Kit – Covering C# .NET Framework VB.NET and Asp.NET", Kogent Solutions Inc 2014.
2. MesbahAhamed, Chris Garrett, JerennyFaridoth Chair Payne, "ASP.NET Programming A Developer Guide", Dreamtech Press 2002.
3. David Sceppa, "Microsoft ADO.NET", Microsoft Press 2005.

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CONCEPT OF DATA MINING
BVMAD403

Unit I: **06**

Introduction Data warehousing: Introduction to Data warehousing, needs for developing data Warehouse, Datawarehouse systems and its Components, Design of Data Warehouse, Dimension and Measures, Data Marts:-Dependent Data Marts, Independents Data Marts & Distributed Data Marts, Conceptual Modeling of Data Warehouses: -Star Schema, Snow flake Schema, Fact Constellations, Multidimensional Data Model & Aggregates

Unit II: **06**

Preprocessing: OLAP, Characteristics of OLAP System, Motivation for using OLAP, Multidimensional View and Data Cube, Data Cube Implementations, Data Cube Operations, Guidelines for OLAP Implementation, Difference between OLAP & OLTP, OLAP Servers: -ROLAP, MOLAP, HOLAP

Unit III: **06**

Introduction to Data Mining: Introduction to Data Mining, Knowledge Discovery, Data Mining Functionalities, Data Mining System categorization and its Issues. Data Processing:-Data Cleaning, Data Integration and Transformation. Data Reduction, Data Mining Statistics. Guidelines for Successful Data Mining

Unit IV: **06**

Data Mining Association: Association Rule Mining:-Introduction, Basic, The Task and a Naïve Algorithm, Apriori Algorithms, Improving the efficiency of the Apriori Algorithm, Apriori - Tid, Direct Hasing and Pruning (DHP), Dynamic Item set Counting (DIC), Mining Frequent Patterns without Candidate Generation (FP-Growth), Performance Evaluation of Algorithms

Unit V: **06**

Classification:-Introduction, Decision Tree, The Tree Induction Algorithm, Split Algorithms Basedon Information Theory, Split Algorithm Based on the Gini Index, Over fitting and Pruning, Decision Trees Rules, Naïve Bayes Method.

Data Mining Tools: Cluster Analysis: -Introduction, Desired Features of Cluster Analysis, Types of Cluster Analysis Methods: -Partitioned Methods, Hierarchical Methods, Density-Based Methods, Dealing with Large Databases. Quality and Validity of Cluster Analysis Methods. WEKA (Waikato Environment for Knowledge Analysis): is a well-known suite of machine learning software that supports several typical data mining tasks, particularly data preprocessing, clustering, classification, regression, visualization, and feature selection. RapidMiner: Formerly called YALE (Yet another Learning Environment), is an environment for machine learning and data mining experiments that is utilized for both research and real-world data mining tasks.

Reference Text Books:

1. Jiawei Han, Micheline Kamber Data Mining: Concepts and Techniques Morgan Kaufmann Publishers

Reference Books:

1. Tan, Steinbach, Kumar Introduction to Data Mining Pearson Addison Wesley, 2006
2. David Hand, Heikki Mannila & Padhraic Smyth Principles of Data Mining PHP Publication

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MOBILE-COMMERCE & USER-CENTERED INTERFACE DESIGN BVMAD404

Unit I: **08**

Introduction - Definition of Electronic Commerce, E-Commerce: Technology and Prospects, Need of E-Commerce,

Advantages and Disadvantages, Framework, Different E-Commerce Models. Mobile Commerce - Introduction, Wireless Application Protocol, Wap Technology, WLAN, WWAN, Bluetooth, KVM, Mobile Information Device, E-Commerce Vs. Mobile-Commerce.

Unit II: **08**

Electronic Payments - The Set Protocol, Payment Gateway, Digital Certificates, Tokens, Smart Card, Credit Card, Magnetic Strip Card, E-Checks, Credit/Debit Card Based EPS, Online Banking.

Unit III: **07**

User Centered Interface Design (UCD) and Human Computer Interaction (HCI)- Human Aspects, Interface Design-Principles and Methods of Design (User Analysis, Task Analysis, Environment Analysis), Guidelines: Principles and Rules.

Unit IV: **07**

Interaction/ Interface Evaluation - The Role Of Evaluation , Collection Of Usage Data, Methods For Conducting Usability Studies- Technology Aspects Of UCD and HCI , Input And Output Devices And Methodologies, Interaction Styles

Reference TextBooks:

1. Jenny Preece, Yvonne Rogers, and Helen Sharp, “Interaction Design”, John Wiley & Sons New York, 2007.

Reference Books:

1. D.D. McCracken and R.J. Wolfe, “User Centered Web Site Design”, Pearson Prentice Hall: Upper Saddle River, NJ, 2004.
2. Alan Dix, Janet E. Finlay, Gregory D. Abowd, Russell Beale, “Human-Computer Interaction”, Prentice Hall, 2004.
3. Ravi Kalakota, andrew Winston, “Frontiers of Electronic Commerce”, Addison- Wesley. 2002
4. Pete Loshin , John Vacca, “Electronic Commerce”, New Age International, 2005
5. Goel, Ritendra, “E-commerce”, New Age International 2016
6. Laudon, “E-Commerce: Business, Technology, Society”, Pearson Education, 2008

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INDUSTRIAL TRAINING/ ON JOB TRAINING/ WORKSHOP BVMAD405P

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SEMESTER-V
MOBILE APPLICATION DEVELOPMENT USING ANDROID
BVMAD501

Course Objectives:

- To learn configuring and developing applications for mobile devices
- To provide knowledge on how to apply the tools required to develop an android application.
- To understand the concept of activities, intents, menus and content provider in android
- To know the various application designs with animation and graphics.

Unit I: **06**

Fundamentals of Java for Android Application Development. Getting An Overview of Android: Introduction Android – Discussing about Android applications – The manifest file - Downloading and installing Android –Exploring the development environment – Developing and executing the first android application.

Unit II: **06**

Using Activities, Fragments And Intents In Android: Working with Activities - Creating an activity - Starting an

activity - Managing the lifecycle of an activity - Applying themes and styles to an activity – Displaying dialog in the

activity – Hiding the title of the activity. Using Intents – Exploring intent objects – Exploring intent resolution – Exploring intent filters – Exploring intent filter collision - Obtaining results from intent - Passing data using an

intent object. Fragments – Fragment implementation – Finding fragments –Adding, removing and replacing fragments – Finding activity using fragment - Using the intent object to invoke built-in application.

Unit III: **06**

Working with the User Interface using View and View Groups: Working with View Groups - The Linear Layout - The Relative Layout - The Scroll View layout - The Table Layout- The Frame Layout.

Working with Views : Using the Text View - Using Edit Text view - Using the Button view - Using the Radio Button view -Using the Check Box view - Using the Image Button view -Using the Toggle Button view - Using the Rating Bar view.Binding data with the adapter view class – Designing the auto text complete view – Implementing screen orientation –Designing the views programmatically – Handling UI events –Specialized fragments – Creating menus.

Unit IV: **06**

Handling Pictures and Menus with Views: Working with image views – Designing context menu for image

view – Using the analog clock and digital clock views –Embedding web browser in an activity- Notifying the user.

Introducing the Data Storage options: Using preferences –Using the internal storage – Using the external storage – Using the SQLite database – Working with content providers.

Unit V: **06**

Emailing and Networking in Android: Building an application to send email – Networking in android –Checking network availability.

Working with Location Services and Maps: Working with Google maps – Working with Gecoding and Reverse Gecoding.

Working with Graphics and Animation: Working with graphics – Using Drawable object – Using the ShapeDrawable object – Working with the NinePatchDrawable graphics – Understanding the concept of Hardware acceleration-Working with animations.

Reference Text Book:

1. Pradeep Kothari, Android application development (with KitKat Support) Black Book, dreamtech press, 2014

Reference Books:

1. Wallace Jackson, Android Applications for Absolutes Beginners, Apress, 3rd Edition,2014.
2. W. Frank Ableson, RobiSen, Chris King, “Android in Action”, Manning Publications, 2nd Edition, 2011.
3. Shawn Van Every, „Pro Android Media: Developing Graphics, Music, Video, andRich Media Apps for Smartphones and Tablets „, Apress Publisher, 2016.

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WEB TECHNOLOGY
BVMAD502

Course objectives:

- To gain knowledge about the working mechanism of Internet.
- To design interactive web pages using Style sheets, Java-script and ASP.

Unit I: **06**

Introduction to Internet – Resources of internet – H/W & S/W requirements of Internet – Domain Naming system – Registering our Domain name – URL – Protocol – Server name – Port – Relative URLs – Overview of web browsers – ISDN Dialup or Leased Line Connection – Internet Service Providers – Internet Services – Protocols concepts – Internet Client and Internet Server – Introduction to WWW, HTTP, TCP/IP, FTP, SMTP, POP3 (Brief Treatment).

Unit II: **06**

Introduction to HTML – Elementary tags in HTML – List in HTML – Displaying Text in Lists –Using Ordered List – Using Unordered Lists – Directory Lists – Definition Lists – Combining List Types – Graphics and Image Formats – Graphics and HTML document – Image and hyperlink anchors – Image maps – Tables – Frames – Forms – Background Graphics and Color.

Unit III: **06**

Introduction to Style Sheets – Setting the default style sheet language – Inline style information – External Style sheets – Cascading Style sheets.

Unit IV: **06**

Introduction to Java Script – Declaring variables – Using Mathematical operators and functions –Using Conditional statement. Creating Functions – Event Handling – Communicating with server.

Unit V: **06**

Introduction to PHP – brief history – installing PHP – Language basics – Lexical structure – data types – variables – expressions and Operators – flow-control statements – various methods of code inclusion – Responding to clients.

Reference Books

1. Elisabeth Freeman and Eric Freeman, “Head First HTML with CSS and XHTML” Head First, O’ Reilly, 2005.
2. Lynn Beighley, Michael Morrison, Head First PHP & MySQL: A Brain-Friendly Guide, O’Reilly 2011.

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MULTIMEDIA TOOLS AND APPLICATIONS BVMAD503

Unit I: **06**

Multimedia System - Introduction To Multimedia, Needs and Areas of use, Identifying Multimedia Elements -Text, Images, Sound, Animation and Video, Making Simple Multimedia With PowerPoint.

Text - Concepts of Plain & Formatted Text, RTF & HTML Texts, Using Common Text Preparation Tools, Conversion to and from of Various Text Formats, Creating text using standard software.

Unit II: **06**

Sound - Sound and its Attributes, Sound and Its Effects in Multimedia, Frequency, Sound Depth, Channels and its Effects on Quality and Storage, Size Estimation of Space of a Sound File, Sound Card Standard – FM Synthesis Cards, Waves Table Cards, MIDI and MP3 Files and Devices, 3D Sounds, Recording and editing sound using sound editors like Audacity, Sound forge etc.

Unit III: **06**

Images - Importance of Images Graphics in Multimedia, Vector and Raster Graphics, Regular Graphics vs. Interlaced Graphics, Image Capturing Methods - Scanner, Digital Camera Etc. Color models-RGB, CYMK, Hue, Saturation, and Brightness, Various Attributes of Images Size, Color, Depth Etc, Various Image File Format BMP, DIB, CIF, PIC, and TIF Format Their Features And Limitations, Image format conversion, various effects on images. Create images using Photoshop, CorelDraw and apply various effects, Using Layers, Channels and Masks in images

Unit IV: **06**

Video- Basic of Video, Analog and Digital Video Type of Video, Digitization of Analog Video,Video Standard – NTSC, Pal, HDTV, Video Capturing Media /Instruments Videodisk Camcorder Compression Techniques, File Formats AVI, MJPG, MPEG, Video Editing and Movie Making Tools, converting formats of videos, recording and editing videos using video editing software like adobe premiere or Sony Vegas.

Unit V: **06**

Animation- Concepts of animation, 2D and 3D animation, tools for creating animation, character and text animation, creating simple animation using GIF animator and flash, Morphing and Applications.

Authoring tools for Multimedia- Introduction to various types of multimedia authoring tools, CD/ DVD based and web based tools, features and limitations, creating multimedia package using all components.

Reference Books:

1. P. K. Andleigh, Kiran Thakrar, Multimedia System Design
2. Ralf Steinmetz, & Klara Nashtedt, Multimedia Computing Communication & Application
3. V.K. Jain, Multimedia & Its Applications, Khanna Publishing House
4. Ramesh Bangia. Fundamentals of Multimedia, Khanna Publishing House
5. K sayood, Introduction to data compression

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NETWORK SECURITY
BVMAD504

Unit I: **08**

Introduction To The Concepts Of Security - The Need for Security, Security Approaches, Principles ff Security, Types of Attacks. Cryptographic Techniques - Plain Text and Cipher Text, Substitution Techniques, Transposition Techniques, Encryption and Decryption. Symmetric and Asymmetric Key Cryptography, Key Range and Key Size, Possible Types of Attacks.

Unit II: **08**

Computer-Based Symmetric Key Cryptographic Algorithms - Algorithm Types and Modes, An Overview of Symmetric Key Cryptography, Diffie-Hellman Key Exchange Algorithm, DES, International Data Encryption Algorithm (IDEA), RC5, Blowfish, AES, Differential and Linear Cryptanalysis.

Unit III: **07**

Computer-Based Asymmetric Key Cryptography - Brief History of Asymmetric Key Cryptography, An Overview of Asymmetric Key Cryptography, The RSA Algorithm, Symmetric and Asymmetric Key Cryptography Together, Digital Signatures, Knapsack Algorithm, Some other Algorithms.

Unit IV: **07**

Internet Security Protocols - Basic Concepts, Secure Socket Layer, Secure Electronic Transaction, SSL Versus SeET HTTPs, 3-D Secure Protocol, Electronic Money, E-Mail Security, Security on Various Layers of Communication Model, Wireless Application Protocol (WAP) Security, Security In GSM.

Reference Text Books:

1. Atul Khate, “Cryptography and Network Security”,Tata McGraw-Hill, 2013

Reference Books:

1. William Stallings, “Cryptography and Network Security principles and practice”, Prentice Hall PTR, 2003.
2. Behrouz Aforouzan, “Cryptography and Network Security”, McGraw Hill, 2011

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INDUSTRIAL TRAINING/ ON JOB TRAINING/ WORKSHOP BVMAD505P

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SEMESTER-VI
FREE AND OPEN SOURCE SOFTWARE
BVMAD601

Course objectives:

- Basic understanding of programming and information technology

Unit I: **06**

Introduction to FOSS - Types of Software - Types of Software licenses - Free software vs opensource software - Advantages of FOSS over proprietary software - Features of FOSS.

Unit II: **06**

Open Source office tools – Introduction – Basic features - Libre office: Write – Calc – Impress.

Unit III: **06**

Open Source operating system – Introduction – Choices – Getting started with GNU Linux – Basic commands – A case study with BOSS (Bharat Operating System Solutions) Linux.

Unit IV: **06**

Open-Source Programming – Building open-source desktop and web application - A Case study with Python – Version Control Systems: Introduction to Git.

Unit V: **06**

Open-Source Audio tools – Getting started with Audacity – Open-source Video Editing tools – A case study with Open Shot.

References:

1. Understanding Open Source and Free Software Licensing by Andrew M. St. Laurent,
2. Released August 2004, Publisher(s): O'Reilly Media, Inc.
3. Libreoffice : https://documentation.libreoffice.org/en/english-documentation/
4. Openshot https://www.openshot.org/features/
5. BOSSLinux: https://downloads.bosslinux.in/isoimages/usermanual/BOSS_Manual.pdf
6. Audacity : https://www.audacityteam.org/help/documentation/
7. Git : https://git-scm.com/docs

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IOS PROGRAMMING
BVMAD602

Unit I: **08**

Fundamentals: Overview of MAC OS and X-CODE, Introduction to iPhone Architecture, Essential COCOA Touch Classes, Interface Builder, Nib File, COCOA and MVC Framework, Overview of features of latest iOS.

Unit II: **08**

Swift Basics: Basics of objective c, Need of transformation from objective c to swift, Data types, variables, constants, operators, Decision making statements, looping, arrays, dictionaries, functions, enumerations, structure, classes, inheritance

Unit III: **07**

iPhone application development: Auto Layout, Views, Outlets and Actions, Different View Controller: single view Controller, Master-Detail View Controller, Navigation View Controller, Managing Application Memory, Application delegate, Handling Keyboard Input, UI Controllers: Label, Button, Text Field, Slider, Switch, Progress View, Page Control, Table View, Collection View, Image View, Text View, Web View, Map View, Date Picker, Picker View, Search Bar, Gestures, push notification, Image Picker, QR Code Scanner, Audio and Video, Accelerometer, Location service, 3D touch, attribute tracking,Making the app live, overview of watchos.

Unit IV: **07**

Database Management: SqLite, Web Services, JSON parsing, XML Parsing, alamofir

Reference Books:

1. iOS 10 Programming Fundamentals with Swift by Matt Neuburg - O'Reilly Media Pub
2. Building iPhone and iPad Electronic Projects - MikeWesterfield - O'Reilly Media Pub.
3. Head First iPhone and iPad Development, 2nd Edition - Dan Pilone, Tracey Pilone - O'Reilly Media
4. Beginning iPhone and iPad Web Apps - ChrisApers, Daniel Paterson - Apress Pub

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SOFTWARE TESTING
BVMAD603

Unit I: **08**

Fundamentals of Testing - Human and Errors, Testing and Debugging, Software Quality, Requirement Behaviors and Correctness, Fundamentals of Test Process, General Principles of Testing, Test Metrics. Role of Testing in SDLC - Review of Software Development Models (Waterfall Model, Spiral Model, W-Model, V-Model), Test on Different Levels (Unit, Component, Module, Integration, System, Acceptance, Generic).

Unit II: **08**

Black Box Testing - Introduction, Equivalence Class Partitioning, Boundary Value Analysis, State Transition Test, Cause Effect Graphing and Decision Table Techniques. Advanced Black Box Techniques.

Unit III: **07**

White Box Technique - Statement Coverage, Branch Coverage, Path Coverage, Gray Box Testing, Instrumentation and Tool Support of Gray Box Testing, Intuitive and Experience Based Testing, Advanced White Box Techniques.

Unit IV: **07**

Test Management-Test Organization, Tasks and Qualifications, Test Planning, Quality Assurance Plan, Prioritization Plan, Test Exit Criteria, Preventive Vs Reactive Approach, Analytical Vs Heuristic Approach, Test Activity Management-Incident Management, Configuration Management, Test Progress Monitoring and Control- Specialized Testing-Performance, Load, Stress, System Testing.

Reference Text Books:

1. Spillner Andreas Linz Tilo Schaefer Hans, “Software Testing Foundation”, Shoff Publishers Distribuions, 2007
2. Sriniwasan D., Gopalswamyr., “Software Testing:Principles & Practices”, Pearson Education 2006

Reference Books:

1. Mathur Aditya P., “Foundations of Software Testing Custom”, Pearson Education, 2000
2. Binder Robert V., “Testing Object Oriented System, Models,Patterns,& Tools”, Addison Wesley, 1996

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WINDOWS MOBILE APPLICATION DEVELOPMENT BVMAD604

Unit-I: **06**

Introduction to Windows 8 Application Development- brief history of windows application development, History of APIs and Tools, Operating System Input Methods The Windows Charm Bar, Start Button, Search Button, Share Button, Devices Button, Settings Button, Windows Desktop, Switching between Desktop Programs

Windows 8 Architecture from a Developer's Point Of View - Windows 8 Development Architecture, Desktop Application Layers, Understanding Windows Runtime: Windows Runtime Architecture Overview, Metadata in Windows Runtime, .NET Framework 4.5: The Installation Model of .NET Framework 4.5, Window Runtime Integration, Picking the Appropriate Technology for Your Project, Choosing a Programming Language

Getting to know Development Environment - Introducing the Toolset, Visual Studio IDE: Creating a New Project, Lighting Up Your Applications with Expression Blend

Unit-II: **06**

Principles Of Modern Windows Application Development - Windows 8 Style Application, Windows 8 Design Language, Introduction to Asynchronous Programming, Evolution of Asynchronous, Programming on the .NET Platform Creating Windows 8 Style Applications With HTML5, CSS, AND JAVASCRIPT - HTML5 and CSS on the Web, HTML5 Technologies, HTML5 Applications on Windows Runtime, The Windows Library for JavaScript (WinJS), Creating Windows 8 Style Applications with JavaScript, Accessing the Filesystem, Managing Data, Respecting the User's Device

Unit-III: **06**

Using Xaml to Create Windows 8 Style User Interfaces - Describing the User Interface Using XAML, Using Namespaces, Understanding the Layout Management System, Reusable Resources in XAML, Basic Controls in Windows 8 Style Applications: Controls with Simply Accessing the Internet: e Values, Content Controls, Working with Data: Data Binding Dependency Properties and Notifications, Binding Modes and Directions

Working with Xaml Controls - Using Animations in Application, Designing the Visual Look of a Control, Working with Complex Controls: Getting to Know the List View Base Controls, Using the Grid View Control, Binding to Data, Grouping Data, Defining Visual Groups

Building Windows 8 Style Applications - The Lifecycle of a Windows 8 Application, Deploying Windows 8 Apps, Commanding Surfaces, Persisting Application Data, Applications and the Start Screen

Unit-IV: **06**

Creating Multi-Page Applications - Navigation Basics, working with Pages, Using the Split Application and Grid

Application Templates

Building Connected Applications - Integrating with the Operating System and Other Apps: Picker Unified Design to Access Data, Understanding the Concept of Contracts, Accessing the Internet: Detecting the Changes of Internet Connectivity, Using Feeds, Accessing Windows Live LEVERAGING TABLET FEATURES - Accommodating Tablet Devices, Building Location-Aware Applications, Using Sensors: Using Raw Sensor Data, Using Sensor Fusion Data

Unit-V: **06**

Advanced Programming Concepts - Building Solutions with Multiple Languages: Hybrid Solutions, Background

Tasks: Understanding Background Tasks, How Background Tasks Work, Cancelling Background Tasks, Implementing Background Tasks, creating a Simple Background Task, Managing Task Progress and Cancelation, Input Devices

Testing and Debugging Windows 8 Applications - The Quality of Software, Becoming Familiar with Debugging,

Controlling the Program Flow in Debug Mode, Monitoring and Editing Variables, Changing the Code While Debugging, Windows 8 Style Application-Specific Scenarios, Introduction to Software Testing, Introduction to Unit Testing, Unit Testing Windows 8 Style Applications

Introducing The Windows Store - Getting to Know the Windows Store, How Customers See an App in the Windows Store, Application Details, Making Money with Your App, The Developer Registration Process: Submitting the Application, The Application Certification Process, The Windows App Certification Kit.

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INDUSTRIAL TRAINING/ ON JOB TRAINING/ WORKSHOP BVMAD605P

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