Master of Computer Applications (MCA) emphasizes on the design and application of information systems and provides a solid background in business functions and Information Technology and covers latest developments in areas where commerce and computing and in general, applications and technology blend together successfully and define the state of art.

MCA students acquire strength in principles, concepts and foundations of computer science, information technology and various applications. They would also have extensive programming / software development experience over a wide variety of platforms / applications. The curriculum has explicitly identified lab components for every course that discusses the principles with an implementation component.

The course is well balanced with significant emphasis on planning, designing and building complex commercial application software and system software. The application areas include transaction processing (such as banking, stock exchange order processing), simulation, database management, e-commerce, networking, embedded technologies, bioinformatics etc.

This MCA programme is not only a complete professional grooming for students for a successful career in the IT industry, but also, provides value-based education through a system of wholesome learning.

This is a 3 year Post Graduate program specializing on Computer Applications. The students admitted to this program are with a graduation (B.Sc.) in Mathematics, Physics, Statistics, Computer Science, BCA and B.Com. Also there is a provision for academically bright students with BCA, B.Sc (Information Technology) and B.Sc (Computer Science), to directly join the second year of the MCA programme through the lateral entry scheme.

TEXT BOOKS/ REFERENCES:


TEXT BOOKS/ REFERENCES:

Introduction and the Relational Model: Introduction to DBMS- Data Models. Structure of Relational Databases- Relational Algebra Operations. SQL: Background- SQL Data Types and Schemas-Integrity Constraints– Data Definition- Basic Structure of SQL Queries- Set Operations- Aggregate
Query Evaluation and Optimization.

**TEXT BOOKS/ REFERENCES:**

**18CA204 PROBLEM SOLVING TECHNIQUES**

General Problem Solving Concepts: Problem Solving in Everyday Life- Types of Problems- Difficulties with Problem Solving- Defining Problem – Data representation in Computer: Constants and Variables, Data types, how the computer stores the data, operators– Introduction to testing and coding the solution – Software Development Life Cycle.

**TEXT BOOKS/ REFERENCES:**

**18CA211 DATA STRUCTURES USING C++**

**Note:** Basic operations and applications of all data structures shall be covered, Different implementations with efficiency analysis shall be discussed.
Abstract Data Types, Linear Data Structures: Arrays (single and multi-dimensional), Stack ADT, Multi Stack ADT, Queue ADT, Circular Queue, Singly Linked List, Doubly Linked List, Circular Linked List.
Graphs: Matrix and List Representation of Graphs, Breadth First Search, Applications of BFS, Depth First Search, Applications of DFS, Spanning Trees

Advanced Data Structures: Dictionaries, Hashing techniques, Disjoint Sets, List, Tree and Array based implementation—Union/Find.

**TEXT BOOKS/ REFERENCES:**


DevOps - JUnit - git - github - Docker - Containers - Continuous Integration - Selenium - HTTP load testing tool - Design patterns.

**TEXT BOOKS/ REFERENCES:**

**18CA212 MICROPROCESSORS AND EMBEDDED SYSTEMS 3-0-1-4**

8085 microprocessor architecture; Instruction set, instruction types and formats; Instruction execution, instruction cycles, different types of machine cycles and timing diagram. - 16-bit microprocessors, 8086 architecture, registers, memory segmentation and addressing, 32-bit/64-bit microprocessor families

Introduction to IoT – Architecture - Applications

Introduction to Arduino: The Arduino Platform, Architecture, Pin functions, overview of main features such as I/O Ports, Timers, interrupts serial port, PWM, ADC, etc.

Introduction to Arduino IDE, writing, saving, compiling and uploading sketches.

Interfacing discrete LEDs, Binary counter, Seven Segment LEDs. Interfacing LCD, switch Interface.

Interfacing with different type of sensors and communication modules

Raspberry Pi Introduction: Board, ARM SoC (system-on-chip) architecture, Hardware interfaces

Basic Programming of the Pi: Hello World, Access the World Wide Web, Play audio, Control Peripherals with a Pi

**TEXT BOOKS/ REFERENCES:**
2. 8086/8088 Microprocessor: Architecture, Programming, and Interfacing by Barry B. Brey
3. Programming Arduino Next Steps: Going Further with Sketches- by Simon Monk
18CA214 OPERATING SYSTEMS 3-0-0-3


TEXT BOOKS/ REFERENCES:

18CA215 SOFTWARE ENGINEERING TECHNIQUES 2-0-1-3

18CA302 ADVANCED DATABASES 3-0-0-3
Introduction to Object Oriented Database: Abstraction, encapsulation, and information hiding, Classes, Inheritance Overloading Polymorphism and dynamic binding - Object-Oriented Data Model. Complex Data Types – Structured Types and Inheritance in SQL – Table Inheritance – Array and Multiset Types in SQL – Object-Identity and Reference Types in SQL.

Distributed Databases - Introduction to distributed architectures – Distributed and parallel databases concepts – Client/server, parallel and distributed architectures – Design strategies: Horizontal, vertical and hybrid fragmentation - Resource allocation.


Spacial and Temporal Data and Mobility: Time in Databases – Spatial and Geographic Data – Multimedia Databases – Mobility and Personal Databases.

MySQL - MongoDB - Redis - Memcached

TEXT BOOKS/ REFERENCES:

18CA305 DESIGN AND ANALYSIS OF ALGORITHMS 3-1-0-4


Graph Algorithms: Graph Traversals (DFS, BFS with Analysis) - Shortest Path Algorithms (with Analysis) – Dijkstra - Bellman Ford- Floyd Warshall’s all Pair shortest path Algorithm - Minimum spanning Tree (with Analysis) – Kruskal- Prims - Applications of BFS and DFS. Network Flow algorithms.

NP Problems: Definition: P-NP-NP Complete-NP Hard. Examples: P-NP.

TEXT BOOKS/ REFERENCES:

**18CA306 COMPUTER NETWORKING AND INTERNET 3-0-1-4**


Common network services and tools - ifconfig, nw.js - netcat - netstat - DNS - dhcp - apache - Nginx - Go language

**TEXT BOOKS/ REFERENCES:**


**18CA307 WEB APPLICATIONS DEVELOPMENT 2-0-1-3**


Web Application development using Spring MVC

Server Side Technologies: Servlets - Java Server Pages –PHP - AJAX Controls for PHP - Basic Node.js

Web Security: Sessions and Cookies.

**TEXTBOOKS / REFERENCES:**

3. “Head First JavaScript Programming -A Brain-Friendly Guide” By Elisabeth Robson, Eric Freeman Publisher: O'Reilly Media, March 2014

TEXT BOOKS/ REFERENCES:
5. H. M. Dietel& P. J. Deitel, Java: How to program, 10/e, (Early Objects) PHI, 2014.


Mining Data Streams- Mining Time-Series Data- Mining Sequence Patterns in Biological Data- Graph Mining – Social network Analysis - Text Mining – Mining the World Wide Web, Applications and Trends in Data Mining

Tools :Implementation of Data mining algorithms using Latest Open Source Data mining Tools.Tensorflow, python, R

TEXT BOOKS/ REFERENCES:
1. Jiawei Han, MichelineKamber and Jian Pei, “Data mining concepts and Techniques”, Third Edition, Elsevier Publisher, 2006.
WEB SERVICES AND CLOUD

Introduction to Web Services, Web service Architecture XML, XSD, DTD, XSLT, Parsers. WSDL- Purpose of WSDL, Types of WSDL, Message Exchange Patterns, Message Exchange Formats.


Cloud Computing Platforms, Cloud service Platforms- storage service, database service, analytical service and application service, Cloud Data center management, Distributed Storage Systems, Cloud usage scenarios, Cloud Security

Amazon Web Services (AWS), Amazon Elastic Cloud, AWS Architecture, Microsoft Azure, Google App Engine, DevOps Services, Open Stack and Open Nebula Private Cloud setup and usage.

TEXT BOOKS/ REFERENCES:

CRYPTOGRAPHY AND NETWORK SECURITY

Introduction:- Goals of Security, types of attacks, services and mechanism, different techniques. Mathematics involved – integer arithmetic, modular arithmetic, matrices, linear congruence, algebraic structures,GF(2n) fields. Symmetric key ciphers – Kerckhoff’s principle, substitution ciphers, transposition ciphers, stream and block ciphers,modern block ciphers, modern stream ciphers, DES structure and analysis, multiple DES, security, AES- transformations, key expansion, ciphers, analysis.

Asymetric key cryptography – RSA cryptosystem, RABIN cryptosystem, ELGAMAL cryptosystem, elliptic curve cryptosystem. Message integrity, Random oracle model, message authentication, hash functions, digital signature, entity authentication, Key management.

Network security: At application layer – Email, PGP, S/MIME. At transport layer – SSL architecture, handshake protocol, changecipherspec protocol, Alert protocol, Record protocol, SSL message format, Transport layer security. At network layer – modes, security protocols, security associations, security policy, Internet key exchange, ISAKMP.

TEXT BOOKS/ REFERENCES:

TEXT BOOKS/ REFERENCES:


TEXT BOOKS/ REFERENCES:

18CA333 BUSINESS INTELLIGENCE 3-0-0-3


TEXT BOOKS/ REFERENCES:
2. Jiawei Han, MichelineKamber and Jian Pei, “Data mining concepts and Techniques”, Third Edition, Elsevier Publisher, 2006.

18CA334 COMPUTATIONAL INTELLIGENCE 3-0-0-3

Artificial Intelligence – a Brief Review – Pitfalls of Traditional AI – Need for Computational Intelligence – Importance of Tolerance of Imprecision and Uncertainty – Constituent Techniques – Overview of Artificial Neural Networks - Fuzzy Logic – Evolutionary Computation.

TEXT BOOKS/ REFERENCES:

18CA335 COMPUTER GRAPHICS AND VISUALIZATION 3-0-0-3


TEXT BOOKS / REFERENCES:

18CA336 DATABASE ADMINISTRATION 3-0-0-3


TEXT BOOKS/REFERENCES:

TEXTBOOKS/REFERENCES:


TEXTBOOKS/REFERENCES:

18CA380 ALGORITHMS LAB 0-0-1-1

Implementation of sorting algorithms – Bubble sort, Insertion Sort, Selection Sort, QuickSort- Merge Sort, Heap implementation using array, Heap sort, performance comparison of sorting algorithms for various classes of inputs like nearly sorted, unsorted etc. O(V^2) and O(E log V) implementations of Dijkstra algorithm, BFS and DFS implementation, graph cycle detection using BFS. Topological sort using DFS, Prims and Kruskals MST. Divide and conquer implementation of Maximum subarray sum Dynamic Programming based solution for 0-1 Knapsack problem, Recursive matrix chain multiplication, Longest common substring,

18CA381 DATA STRUCTURES AND DBMS LAB 0 -0-1-1

Linear data structure implementation: Singly Linked list, Doubly linked list, Stack, Queue, and applications. Non linear data structure implementation: Binary search tree, AVL tree, Adjacency matrix and adjacency list representations, skip list, dictionary, suffix tree. Table Design- Data Definition Language (DDL) commands - Table creation and alter (include integrity constraints such as primary key, referential integrity constraints, check, unique and null constraints both column and table level, Drop - Other database objects such as view, index, cluster, sequence, synonym etc. - Practice SQL Data Manipulation Language (DML) commands - Row insertion, deletion and updating - Retrieval of data - Simple select query - Select with where options (include all relational and logical operators) - Functions: Numeric, Data, Character, Conversion and Group functions with having clause. - Set operators - Sorting data - Sub query (returning single row, multiple rows, more than one column, correlated sub query) - Joining tables (single join, self-join, outer join) - Data manipulations using date functions - User defined functions in a query - Transaction Control Language (TCL) commands (Grant, revoke, commit and save point options) - Usage of triggers, functions and procedures using PL/SQL constructs

18CA382 COMPETITIVE PROGRAMMING LAB 0-0-1-4

Sorting - Greedy algorithms – Backtracking - Dynamic programming - Basic graph algorithms - Advanced graph algorithms – Trees - Basic geometry - Computational geometry – Strings - Basic heuristic search - Advanced search - Simulation problems – Number theory – Discrete structures
Any of the online platforms like CodeChef / CodeForces / Hackerrank can be used.

18CA386 ANDROID APPLICATION DEVELOPMENT 0-0-1-1

Menu, Dialog, List and Adapters
What is Menu?- Custom Vs. System Menus-Creating and Using Handset menu Button
(Hardware)-What are Android Themes. What is Dialog? How to create an Alter Dialog?
List & Adapters
Database SQLite
IntroducingSQLite-SQLiteOpenHelper and creating a database-Opening and closing a
database
Working with cursors Inserts, updates and deletes
Location Based Services and Google Maps
Using Location Based Services -Working with Google Maps
Multimedia Programming using Android
Multimedia audio formats-Creating and Playing -Multimedia audio formats-Kill / Releasing
(Memory Management)-How to associate audio in any application-How to associate video
playback with an event
WebView
How to develop your own custom made Web browser -How to use WebView object in XML
Permission for using the Internet-Methods for associated with ‘Go’, ‘Back’, ‘Forward’ etc

TEXT BOOKS/ REFERENCES:
2. Android Application Development All in one for Dummies, Barry Burd, Edition: I
3. Teach Yourself Android Application Development in 24 Hours, SAMS Publication, Edition I

18CA391 RESEARCH LEARNING AND PROBLEM FORMULATION 1-0-1-2

Research: Meaning, Purpose, Types of Research, Steps in Research, Identification, Selection and
Formulation of Research Problem, Research Questions, Research Design, Formulation of
Hypothesis, Review of Literature.Internet as a source in identifying gap areas from literature
reviews and emerging trends.Sampling Technique: Types of Sampling, Steps in Sampling,
Sample Size, Advantages and Limitations of Sampling.
Data for Research: Primary Data, Collection Methods, Observation, Interview, Questionnaire,
Pretest-Pilot test, Experimental and Case Studies, Secondary Data, Relevance, Limitations and
Cautions. Processing Data: Checking, Editing, Coding, Transcriptions and Tabulation. Data
Analysis- Meaning and Methods- Quantitative and Qualitative Analysis. Statistical Tables,
Diagrams and Graphs, Measures of Averages, Measures of Dispersion, Correlation Analysis and
Regression Analysis.
Familiarization of Spreadsheet Tools, Presentation Tools and Writing Tools, Structuring the
Report, Pagination, Identification, Presenting Footnotes, Abbreviations, Presentation of Tables
and Figures- Referencing- Use and Format of Appendices, Indexing.
Research Report: Types of Reports- Styles of Reporting- Steps in Drafting Reports-Editing and
Evaluating the Final Draft.Developing a Proposal and Working in a Research Team.Critical
Appraisal of Published Research: Guidelines for Appraisal.
Ethical Issues, Copyright, Royalty, Intellectual Property Rights and Patent Law, Reproduction of
Published Material, Citation and Acknowledgement.

TEXT BOOKS/ REFERENCES:
1. CR Kothari: “Research Methodology-Methods and Techniques”, New Age International
Publishers, 2004
Fulfillment, 2003
(Cambridge, Mass.: Schenkman, 1967)
Introduction: About Android, Pre-requisites to learn Android, Dalvik Virtual Machine & .apk file extension, Android API levels (versions & version names)
Android Java Basics: Getting started with Android development, project folder structure, simple programming, running project, generating build/APK of the app from Android Studio
First application: Creating Android Project, Android Virtual Device Creation, Set up debugging environment, Workspace set up for development, Launching emulator, debugging on mobile devices.
Basic UI design: Basics about Views, Layouts, Drawable Resources, Input controls, Input Events, Toasts.
More UI Components: Layouts - GridView and ListView, Action bar, Adapters, Menus: Option menu, context menu, sub menu, Pickers - Date and Time, Spinners.
Activity and Fragment: Activity, Fragment, Activity Lifecycle and Fragment Lifecycle.
Intents: Implicit Intents, Explicit intents, communicating data among Activities.
Navigation Drawer: Panel that displays the app’s main navigation screens on the left edge of the screen
Android Notifications – Toast, Dialogs (TimePicker, DatePicker, Progress, Alert), Notification Manager and Push Notification
Introducing SQLite - SQLiteOpenHelper and creating a database - Opening and closing a database, Working with cursors Inserts, updates, and deletes.

TEXT BOOKS/ REFERENCES:
1. Erik Hellman, Android Programming: Pushing the Limits, Wiley
2. Pradeep Kothari,Android Application Development Black Book, Dreamtech Press, KLSI
3. Head first Android Development.

Automata and Language: Chomsky hierarchy of languages, Introduction to Finite Automata – Non-Deterministic Finite Automata- equivalence of NFAs and DFAs- minimization of DFA- Regular Expressions. Context-free Grammar - Parse tree derivations (Top-down, Bottom-up), Context-free languages – Chomsky normal form, GNF.

TEXT BOOKS/ REFERENCES:

18CA431 INFORMATION RETRIEVAL 3-0-0-3


TEXT BOOKS/ REFERENCES:

18CA433 MODERN WEB APPLICATION DEVELOPMENT USING MEAN STACK 3-0-0-3

2. Introduction to Node JS Installation, Callbacks, Installing dependencies with npm, Concurrency and event loop fundamentals, Node JS callbacks, Building HTTP server, Importing and exporting modules, Building chat application using web socket.
3. Building REST services using Node JS REST services, Installing Express JS, Express Node project structure, Building REST services with Express framework, Routes, filters, template engines - Jade, ejs.

TEXT BOOKS/ REFERENCES:

18CA434 NETWORK MANAGEMENT AND SYSTEM ADMINISTRATION 3-0-0-3


TEXT BOOKS / REFERENCES:

18CA436 OPEN SOURCE SYSTEMS 3-0-0-3


18CA437  SEMANTIC WEB TECHNOLOGIES  3-0-0-3


TEXT BOOKS / REFERENCES:

18CA438  SOFTWARE QUALITY ASSURANCE  3-0-0-3


TEXT BOOKS/ REFERENCES:

18CA439  STRUCTURE AND INTERPRETATION OF COMPUTER PROGRAMS  3-0-0-3

Introduction to the Elements of Programming Languages: Different Types of Programming Languages -Modeling Programming Languages, Computability versus Complexity,Computer Science for Computation.
Introduction to LISP and Scheme - Building Abstractions with Procedures - The Elements of Programming Procedures and the Process they Generate – Formulating Abstractions with Higher-Order Procedures.


TEXT BOOKS/ REFERENCES:

18CA440 WIRELESS COMMUNICATIONS AND NETWORKS 3-0-0-3


TEXTBOOK / REFERENCES:

18CA451 CLOUD COMPUTING 3-0-0-3


TEXT BOOKS / REFERENCES:

18CA452 DEEP LEARNING 3-0-0-3

Historical Trends in Deep Learning, Linear Algebra, Probability and Information theory, Numerical Computation, Machine learning basics
Deep Networks: Deep feedforward networks, Regularization for deep learning, Optimization for training deep models, Convolutional Networks, Sequence modelling: Recurrent and recursive nets, Practical methodology, Applications
Deep Learning Research: Linear factor models, autoencoders, Representation learning, Structured probabilistic models, Monte-Carlo models,
Intro to NLP and Deep Learning, Simple Word Vector representations
Introduction to Tensorflow
Convolutional neural networks- Dynamic Memory Networks.

TEXT BOOKS/ REFERENCES:
3. Yoav Goldberg, A Primer on Neural Network Models for Natural Language Processing, 2015
4. Jurafsky, James H. Martin, Speech and Language Processing, 3rd edition, 2017

18CA453 GRAPH THEORY 3-0-0-3

Trees & Applications: Trees, Properties, Rooted trees, Rooted & Binary Trees, Prefix codes, Binary codes, Huffman’s Algorithm, Spanning trees, Kruskal’s& Prim’s algorithms for the optimal spanning tree, Activity Networks in Project management, Topological sorting, CPM Algorithm for Activity Networks, Arborescence, Prefix, in-fix and postfix Tree traversals, Expression trees, Polish notation, Matrices of digraphs, Acyclic digraphs, decyclization, Graphs in Computer Programming,
Fundamental cycles, algorithm for the fundamental cycles, Fundamental cut sets, algorithm for the fundamental cut sets, Vectors & Vector spaces of a graph, cycle & cut-set vector spaces of a graph.

Connectivity, Networks & Combinatorial Optimization: Cut vertices, Bi-connected graphs, algorithm for cut vertices and biconnected graphs, Vertex & Edge connectivity, Menger’s Theorem (Statement only), Network flows, Ford and Fulkerson’s Theorem (Statement only), Edmonds-Karp Algorithm for the maximal network flow, Network Simplex algorithm for the minimum cost flow, Matching, Perfect matching, Hall’s marriage theorem, Edmond’s Algorithm for the maximum cardinality matching, Independent set, Covering, Clique, Dominating Set.

Planarity, Coloring & Intractable graph problems: Planar graphs, Kuratowski graphs, Different representations of planar graphs, DMP Algorithm for the Planarity detection, Geometric dual, Coloring, chromatic number, Four color theorem (Statement only), Grundy coloring, time table scheduling problem, chromatic polynomials, Algorithmic complexity, growth rates, P, NP, NPC classes, Cook’s theorem (Statement only), NPC reduction, NPC Graph problems.

TEXT BOOKS/ REFERENCES:
1. NarsinghDeo, Graph theory with Applications to Engineering & CS, PHI
2. Alan Gibbons, Algorithmic Graph theory, Cambridge University Press

**18CA454 INFORMATION SECURITY** 3-0-0-3

TEXT BOOKS/ REFERENCES:

**18CA455 INTELLIGENT SYSTEMS** 3-0-0-3
Introduction to Agents:Structure of Intelligent Agents – Problem Solving Agents- Formulating Problems
Situational Calculus - Representation of Planning - Partial Order Planning - Practical Planners – Conditional Planning.

TEXT BOOKS/ REFERENCES:

18CA456 INTERNET OF THINGS 3-0-0-3


TEXT BOOKS/ REFERENCES:
1. The Internet of Things: Applications and Protocols, Wiley publications. Author(s): Oliver Hersent, David Boswarthick, Omar Elloumi
2. Architecting the Internet of Things, Springer publications. Author(s): Dieter Uckelmann, Mark Harrison, Florian Michahelles
3. Internet of Things with Arduino Cookbook, Packt Publications. Author(s): Marco Schwatrz.

18CA457 MACHINE LEARNING 3-0-0-3

Introduction, linear classification, perceptron update rule, Perceptron convergence, generalization, Maximum margin classification, Classification errors, regularization, logistic regression, Linear regression, estimator bias and variance, active learning, Non-linear predictions, kernels, Kernel regression, kernels, Support vector machine (SVM) and kernels, kernel optimization.
Model selection, Model selection criteria, Description length, feature selection, Combining classifiers, boosting, Boosting, margin, and complexity, Margin and generalization (EM) algorithm, EM, regularization, clustering, Clustering, Spectral clustering, Markov models, Hidden Markov models (HMMs), Bayesian networks, Learning Bayesian networks, Probabilistic inference, Current problems in machine learning.

TEXTBOOKS / REFERENCES:

18CA458 NATURAL LANGUAGE PROCESSING 3-0-0-3


TEXT BOOKS/ REFERENCES:

18CA459 SECURE APPLICATIONS FOR MOBILE DEVICES 3-0-0-3

OS refresher; TCP/IP Refresher; Mobile Systems Characteristics; Design of Mobile OS, Android Internals, API - Application Software Design for Android - Tour of: Android Open Source Project (AOSP), CyanogenMod; Building a ROM; Linaro - Network Security; Linux Security; Android Security; Location Based Services; Pocket Spy - Android Permissions System - Mobile Malware - Privacy Violations – cyber security - Mobile-, Cloud-, Ubiquitous-, Pervasive- Computing
Apache cordova - Cross site request forgery- cross site - browser security model and policies - same origin policy - CORS - Android security model.

TEXT BOOKS/ REFERENCES:
5. Adapted Materials from Android security sites.

18CA460 SOFTWARE TESTING 3-0-0-3
Introduction: Introduction to software testing and analysis, Error, Fault, Failure, Incident, Test Cases, Testing Process, Limitations of Testing, No absolute proof of correctness, Overview of Graph Theory.

Specification-based testing techniques, code-based testing techniques, Model-based testing, Functional Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique.

Structural Testing: Path testing, DD-Paths, Cyclomatic Complexity, Graph Metrics, Data Flow Testing, Mutation testing.

Static Analysis, Dynamic Analysis
Reducing the number of test cases: Prioritization guidelines, Priority category, Scheme, Risk Analysis, Regression Testing, Slice-based testing


Program slicing and its application, Reliability analysis, Formal methods; verification methods; oracles.


TEXT BOOKS/REFERENCES:

18CA480   PYTHON LAB  0-0-1-1

Introduction To Python - Understanding Python variables - Python basic Operators - Understanding python blocks - Python Data Types - Declaring and using Numeric data types: int, float, complex - Using string data type and string operations - Defining list and list slicing
Use of Tuple data type - Python Program Flow Control - Conditional blocks using if, else and elif

18CA485   COMPUTER ORGANIZATION AND ARCHITECTURE LAB0-0-1-1
Basic Organization and Hardware Components of a Personal computer - Assembling of Personal Computer - Formatting - Partitioning the Hard Disk - Installation of Windows and Linux Operating System - Digital Circuits: Realisation of Logic Gates - Realization of logic functions with the help of universal gates-NAND Gate - Half / Full Adder & Half / Full Subtractor - Code Conversion

18CA486 C# and .NET LAB 0-0-1-1


String class: methods and properties of string class, enumerations, boxing and unboxing, OOPS concepts: Encapsulation, data hiding, inheritance, interfaces, polymorphism, operator overloading, overriding Methods, Static Class members, Delegates and events. Exception Handling, garbage collector, generics and collection

Basics of Windows Programming - Event Driven Programming, Windows Forms, Using common controls - Labels, textboxes, buttons, check boxes, radio button, progress bar, combo box, list box. Components - timer, imagelist, Menus, Modal and Modeless Dialog Boxes, MDI, Mouse and keyboard event handling.


Files: System.IO, directory and file types, Stream readers and stream writers, working with binary data.

18CA487 FUNCTIONAL PROGRAMMING LAB 0-0-1-1


Introduction to Haskell, Scala

18CA488 LINUX AND SHELL PROGRAMMING LAB 0-0-1-1

Introduction to Linux - History, Architecture, Comparison with UNIX, Features and Facilities of Linux, Basic commands in Linux, Files and File Structure - Linux File System, Boot block, Super block, Inode table, Data blocks, Linux standard directories. File naming Conventions, Path, Types of file names and Users, File Commands in Linux, file comparisons, Directory Commands, Text Editors - Functions of a Text Editor, vi Editor, Locating Files, File Access Permissions [FAP], Viewing and Changing FAPs. Linux Shell - Session, Standard streams, Redirection, pipes, tee, command execution, command line editing, command substitution, job control, aliases. Shell variables, exporting, output, input, shell environment variables and customization, startup scripts, command history.

Common administrative tasks, identifying administrative files configuration and log files, Role of system administrator, Managing user accounts - adding & deleting users, changing permissions and ownships, Creating and managing groups, modifying group attributes, Temporary disabling of users accounts, creating and mounting file system.
Checking and monitoring system performance - file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Installing and removing packages. Backup, restore and Compress utilities - tar, cpio, dump, rsync and restore utilities.

Bash shell programming – basic concepts, expressions, decision making selections, repetition, special parameters - positional parameters, shift, argument validation, script examples.

Communication in Linux - mesg, who- T, talk, write, wall, finger, chfn, ping, traceroute utilities, email facilities. Configuration of servers - Telnet, FTP, DHCP, NFS, SSH, Proxy Server (Squid), Web server (Apache), Samba. Daemons - init, cron, atd, xinetd, inetd, the services file. named, sshd, httpd.

18CA489 MEAN STACK LAB 0-0-1-1


Introduction to AngularJS - AngularJS Expressions - AngularJS Modules - AngularJS Data Binding - AngularJS Scopes - AngularJS Directives & Events - AngularJS Controllers - AngularJS Filters - AngularJS Services - AngularJS HTTP - AngularJS Tables - AngularJS Select - Fetching Data from MySQL - AngularJS Validation - AngularJS API - AngularJS Animations - AngularJS i18n and i10n - NodeJS

18CA496 DISSERTATION Phase I 0-0-0-5

The objective of Dissertation – Phase 1 is to gear up students for preparation of Dissertation-Phase 2 in Semester-VI. Dissertation provides an opportunity to the students to demonstrate independence and originality in thought and application. Students will select topics from the field of computer application and based on a thorough review of literature on that topic, they will identify the problems and decide on plans of research for dissertation. Under the supervision of faculty members, they will execute their plans involving theoretical and/or experimental work. Students will have to prepare proper documentation consisting of SRS, Modeling Techniques, Development Strategies and Implementation and Testing Strategies. Student may use any Design Methodologies such as SSAD, OOAD and UML etc. This is done during phase 1. Regular reviews will be conducted.

18CA497 DISSERTATION Phase II 0-0-0-12

The results obtained in phase 1 will be analysed to arrive at a conclusion which will lead to some novelty in the field of computer application. Dissertation will be prepared as per the prescribed format/guidelines and will be presented in the form of regular reviews. The Dissertation work will be evaluated continuously over the span of the semester as per the approved procedure. For the final review, the department may appoint external expert from industry or academics. Also, a technical paper based on the work done has to be submitted and published at a reputed conference which indexes the publications in SCOPUS. The formalities insisted by the department in this regard has to be strictly adhered to.

18HU211 FINANCIAL ACCOUNTING 2-0-0-2

TEXT BOOKS/ REFERENCES:

18HU431 MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR

Managers and Management – Meaning – Role of managers – Processes of management – Historical roots of contemporary management practices.
Foundations of planning – Types of plans–Approaches to planning – Planning in dynamic environment. Organizational designs and structures – traditional and contemporary organizational designs. Organizational culture and ethical behavior – factors shaping organizational culture–creating an ethical culture.
Motivation–early and contemporary theories of motivation. Leadership – early and contemporary approaches to leadership. Groups and group development – turning groups into effective teams.
Managing change – process, types and challenges.

TEXTBOOK / REFERENCES:
1. Jennifer George and Gareth Jones “Understanding and Managing Organizational Behavior”, Published by Pearson Education Inc.
Introduction to Information System Concepts - Definition to MIS, Role and Impact - Role of Computers in MIS
Management Practices - Strategic Management of Business - The Concept of Corporate Planning - Essentaility of Strategic Planning - Development of Business Strategies and Types of Strategies
Decision Making - Information Concepts - Systems – Concepts – Controls – Types of System
Decision Support System – Concepts And Philosophy – DSS Deterministic System – MIS and Role of DSS.

TEXTBOOK / REFERENCES:

18HU433 PRINCIPLES OF ECONOMICS AND MANAGEMENT 3-0-0-3


TEXTBOOKS/REFERENCES:

18HU434 SOFTWARE PROJECT MANAGEMENT 3-0-0-3


**TEXT BOOKS/ REFERENCES:**

**TEXT BOOKS/ REFERENCES:**

Testing of Hypothesis. Parameter and statistic – sampling distribution – Estimation and testing of hypothesis – critical region and level of significance – errors in testing of hypothesis – one-tailed and two-tailed tests – procedure for testing hypothesis – confidence interval – test of significance of large and small samples – Student’s t-distribution – Snedcor’s F distribution

Chi-Square Test for Goodness of fit and Independence.

TEXT BOOKS/ REFERENCES:

18MA311 NUMERICAL ANALYSIS AND OPTIMIZATION TECHNIQUES 3-1-0-4


TEXT BOOKS/ REFERENCES:
3. R Panneerselvam – Operations research, 2nd edition, PHI
5. Gerald and Wheatley, Applied Numerical Analysis, Pearson Education Asia, Sixth Edition