Eligibility for Admission to Master of Computer Applications (M.C.A)

Candidate who have passed the under-mentioned degree examinations of this University or an examination of other institution recognized by this University as equivalent thereto provided they have undergone the course under 10+2+3 or 11+1+3 or 11+2+2 pattern shall be eligible for admission to the M.C.A. Degree Course under CBCS.

(a) B.C.A/B.E.S/B.Sc. in Computer Science/Mathematics/Physics/Statistics/Applied Sciences OR (b) B.Com / Bachelor of Bank Management/B.B.A/B.L.M/B.A Corporate Secretaryship / B.A. Economics/ any other Bachelor’s Degree in any discipline with Business Mathematics and Statistics or Mathematics/Statistics in Main/Allied level OR (c) B.Sc., Chemistry with Mathematics and Physics as allied subjects OR (d) B.E/B.Tech/M.B.A OR (e) A Bachelor’s Degree in any discipline with Mathematics as one of the subjects at the Higher Secondary level (i.e. in +2 level of the 10+2 pattern)

Core Courses offered by the Department of Computer Science for M.C.A. Degree programme

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title of the Courses</th>
<th>Core/Elective</th>
<th>Credits L-T-P-C</th>
<th>Course Faculty</th>
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<tbody>
<tr>
<td>MSI C301</td>
<td>Digital Principles</td>
<td>C</td>
<td>3-1-0-4</td>
<td>S. Gopinathan (SG)</td>
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<tr>
<td>MSI C302</td>
<td>Object Oriented Programming with C++</td>
<td>C</td>
<td>3-1-0-4</td>
<td>PL. Chithra (PLC)</td>
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<td>MSI C303</td>
<td>Programming in Java and Web Technology</td>
<td>C</td>
<td>3-1-0-4</td>
<td>M. Sornam</td>
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<td>Programming in C++ Lab.</td>
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<td>PL. Chithra (PLC)</td>
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<td>C</td>
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<td>Faculty Concerned</td>
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<tr>
<td>MSI C306</td>
<td>Microprocessors and Applications</td>
<td>C</td>
<td>3-1-0-4</td>
<td>S. Gopinathan</td>
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<tr>
<td>MSI C307</td>
<td>Object Oriented Data Structures</td>
<td>C</td>
<td>3-1-0-4</td>
<td>B. Lavanya</td>
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<td>MSI C308</td>
<td>Operating Systems</td>
<td>C</td>
<td>3-1-0-4</td>
<td>PL. Chithra</td>
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<td>MSI C310</td>
<td>Design and Analysis of Algorithms</td>
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<td>3-1-0-4</td>
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<tr>
<td>MSI C311</td>
<td>Database Management Systems</td>
<td>C</td>
<td>3-1-0-4</td>
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<tr>
<td>MSIC312</td>
<td>Computer Graphics</td>
<td>C</td>
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<td>MSI C314</td>
<td>Computer Networks</td>
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<tr>
<td>MSI C315</td>
<td>Theory of Computation</td>
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<td>3-1-0-4</td>
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<td>Digital Image Processing</td>
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<td>3-1-0-4</td>
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<td>MSIC317</td>
<td>Data Mining and Data Warehousing</td>
<td>C</td>
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<tr>
<td>MSI C319</td>
<td>Mini Project and Group Discussion</td>
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<td>MSIC320</td>
<td>Soft Computing</td>
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<tr>
<td>MSI C321</td>
<td>Software Engineering</td>
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<td>MSIC322</td>
<td>Big Data and Analytics</td>
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<td>MSI C323</td>
<td>Project Work</td>
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**List of elective Courses for M.C.A. and M.Sc. Computer Science**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Type</th>
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<th>Instructor</th>
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<tbody>
<tr>
<td>MSI E301</td>
<td>Financial Accounting and Analysis</td>
<td>E</td>
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<tr>
<td>MSI E302</td>
<td>Principles of Compiler Design</td>
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<td>MSI E303</td>
<td>Advanced Java Programming</td>
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<td>MSI E304</td>
<td>Programming in COBOL</td>
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<tr>
<td>MSI E305</td>
<td>High Performance Computing</td>
<td>E</td>
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<td>MSI E306</td>
<td>Multimedia Systems</td>
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<td>B. Lavanya/GF</td>
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<tr>
<td>MSI E307</td>
<td>Artificial Intelligence &amp; Expert Systems</td>
<td>E</td>
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<tr>
<td>MSIE308</td>
<td>Computer Oriented Statistical Methods</td>
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<td>MSIE309</td>
<td>Unix and Shell Programming</td>
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<td>MSIE310</td>
<td>Programming in Dot NET</td>
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<td>M. Sornam/GF</td>
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<td>MSI E311</td>
<td>Software Project Management &amp; Testing</td>
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<tr>
<td>MSI E312</td>
<td>Software Quality And Assurance</td>
<td>E</td>
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<td>MSI E313</td>
<td>Computer Simulation &amp; Modeling</td>
<td>E</td>
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<td>Computer Aided Design</td>
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<td>Pattern Recognition</td>
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<td>MSI E316</td>
<td>Object Oriented Analysis and Design</td>
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<td>Project and Case Studies –I</td>
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<tr>
<td>MSI E318</td>
<td>Project and Case Studies –II</td>
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<td>MSIE321</td>
<td>Introduction to Programming in PYTHON</td>
<td>2-0-1-3</td>
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<td>MSIE322</td>
<td>Functional Programming using Haskell</td>
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<tr>
<td>MSIE323</td>
<td>Cryptography</td>
<td>3-0-0-3</td>
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<td>MSIE324</td>
<td>Programming in C</td>
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</table>

List of elective Courses offered for other Department Students

<table>
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<th>Instructor</th>
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<tr>
<td>MSI E319</td>
<td>Introduction to Information Technology and Programming in C</td>
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<tr>
<td>MSI E320</td>
<td>Internet and Java Programming</td>
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Detailed Course Contents

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<tr>
<td>MSI C301</td>
<td>Digital Principles</td>
<td>3 1 0 4</td>
<td>S.Gopinathan</td>
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UNIT IV: SYNCHRONOUS AND AYNCHRONOUS SEQUENTIAL CIRCUITS: Synchronous Sequential Circuits: General Model – Classification – Design – Use of Algorithmic State Machine – Analysis of Synchronous Sequential Circuits Asynchronous Sequential Circuits:– Problems in Asynchronous Circuits Design of Combinational and


<table>
<thead>
<tr>
<th>MSI C302</th>
<th>Object Oriented Programming with C++</th>
<th>3</th>
<th>1</th>
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<th>4</th>
<th>PL.Chithra/GL</th>
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UNIT-I: Introduction to OOP-Overview of C++-Classes-Structures-Union-Friend Functions-Friend Classes-Inline functions-Constructors-Destructors-Static Members-Scope Resolution Operator-Passing Objects to functions-Function returning objects.
UNIT-II: Arrays - Pointers-this pointer –References-Dynamic memory Allocation-Function Overloading-Default arguments-Overloading Constructors-Pointers to Functions-Ambiguity in function overloading.
UNIT-III: Operator Overloading-Member Operator Function-Friend Operator Function-Overloading some special operators like[],(),a and comma operator-Inheritance-Types of Inheritance-Protected members-Virtual Base Class-Polymorphism –Virtual Functions-Pure virtual functions.
UNIT-IV: Class templates and generic classes-Function templates and generic functions-Overloading a function template-power of templates-Exception Handling - Derived class Exception.

Text:

Reference Books
1. B. Stroustrup, C++ Programming Language, Addison-Wesley, 1997
<table>
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<tr>
<th>MSIC303</th>
<th>Programming in Java and Web Technology</th>
<th>3</th>
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<th>4</th>
<th>PL. Chithra/G.F.</th>
</tr>
</thead>
</table>


Text books:

Reference Books
1. J. Lewis, W. Loftus, Java Software Solutions, Addison-Wesley, 2007
2. P. Deitel and H. Deital, Java for programmers, Pearson, 2009

**MSIC304** | Programming in C++ Lab | 0  | 0  | 2  | 2  | PLC |
|---------|--------------------------|----|----|----|----|-----|

C++: Prime number generations- Recursive and non-recursive functions to find the factorial of a given integer, to find the GCD of two given integers-Class implementation with functions to swap two integers, to swap two characters, swap two real numbers - overloaded functions-Sorting-Matrix manipulation-Complex Number manipulation-String manipulation using overloading- Types of inheritance manipulations-Constructors and destructors implementation - Different types of exception handling implementation.

**MSIC305** | Programming in Java and Web | 0  | 0  | 2  | 2  | Guest Lecturer |
Technology Lab

Java: To find all the possible roots of a quadratic equation - Fibonacci number generation using recursive and non-recursive functions - sorting names - matrix multiplication - Sum of integers with String Tokenizer class - File manipulation - multiple threads - Using Thread class, using Runnable interface - Handling predefined exceptions - Handling user defined exceptions - display bio-data using awt controls - a frame to implement a simple arithmetic calculator using an event handling. Web technology - implementation of concepts and tags in HTML - DHTML - CSS - programs in javascript - programs in vb script and programs in ASP.

MSI C306 Microprocessors and Applications 3 1 0 4 S.Gopinathan

UNIT-II: Simple programs - Addressing Modes — Program Structure-Jumps – Flags - Conditional Jumps – If – Then -If then Else and Multiple If then else programs – While – Do - Repeat Until-delay loops - String procedures - Macros.

Text book:

Reference books:

MSIC307 Object Oriented Data Structures 3 1 0 4 B. Lavanya


TEXT BOOKS

REFERENCES

<table>
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<th>MSIC308</th>
<th>Operating Systems</th>
<th>3</th>
<th>1</th>
<th>0</th>
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<th>PL.Chithra</th>
</tr>
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UNIT-I : Introduction-Multiprogramming-Time sharing-Distributed system-real-time systems-I/O structure-Dual-mode operation-Hardware protection-General system architecture-operating system services-System calls-System programs-System design and implementation.
UNIT-IV: Files and protection-file system organization-file operations-access methods-consistency semantics-directory structure organization-file protection-implementation issues-security-encryption. Case studies - MS-DOS andUNIX operating systems.
Text book:

Reference Books

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<th>MSIC309</th>
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<tr>
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<th>Design and Analysis of Algorithms</th>
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UNIT I: Introduction: Algorithm, Pseudo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis.

UNIT II: Disjoint Sets- disjoint set operations, union and find algorithms, spanning trees, connected components and biconnected components. Divide and conquer: General method, applications - Binary search, Quick sort, Merge sort, Strassen’s matrix multiplication.


UNIT IV: Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles. Branch and Bound: General method, applications - Travelling sales person problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution. NP-Hard and NP-Complete problems: Basic concepts, non deterministic algorithms, NP - Hard and NP Complete classes, Cook’s theorem.

TEXT BOOK:

REFERENCES:
UNIT I: Introduction to File and Database systems - Database system structure - Data Models – Introduction to Network and Hierarchical Models – Relational Model – Relational Algebra and Calculus. E-R model – diagram, generalization, specialization- Data base design - Informal design guidelines for relational schemas; functional dependencies; normal forms based on primary keys, general definitions of 2nd and 3rd normal forms; Boyce-codd normal forms., 4NF, 5NF.


TEXT BOOKS

REFERENCES

Text Book:
Reference books:

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<th>Database Systems and Computer Graphics Lab.</th>
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<th>Guest Lecturer</th>
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DBMS Lab: Design of scientific calculator with memory- student information system - employee payroll system - inventory control system - railway reservation/cancellation system - airline ticket and its operations - hospital management system - library management system - bank loan operational system. Graphics Lab.: Different Fills Style and draw the different simple figures - Using different fonts and display different messages - Draw a line using DDA (digital differential analyzer algorithm) - Draw a circle and ellipse using bresenham’s algorithm - Generate a character using line drawing algorithm and bit map method - Using 2D technique Draw the following: Translation, Rotation, Scaling, Sheering, Reflection(miring object) - Using clipping algorithm draw the following Line and Polygon-Using color techniques draw the following:HSV to RGB , RGB to HSV

<table>
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<tr>
<th>MSIC314</th>
<th>Computer Networks</th>
<th>3</th>
<th>1</th>
<th>0</th>
<th>4</th>
<th>P.Thangavel</th>
</tr>
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</table>

Unit –II: Data link layer Design issues - error detection and correction - elementary data link protocols - sliding window protocols - Packet over SONET- ADSL. MAC sublayer protocols.
Unit-III: Network layer-design issues – Routing and congestion control algorithms, Quality of service, internetworking - Network layer in the INTERNET.

Text book:
(i) A. S. Tanenbaum, and D.J. Wetherall, 2012, Computer Networks, 5th
Reference Books


(ii) F. Halsall, 1995, Data Communications, Computer Networks and Open Systems, Addison Wessley.


**UNIT I : Introduction to formal proof – Additional forms of proof – Inductive proofs – Finite Automata (FA) – Deterministic Finite Automata (DFA) – Non-deterministic Finite Automata (NFA) – Finite Automata with Epsilon transitions.**

**UNIT II : Regular Expression – FA and Regular Expressions – Proving languages not to be regular – Closure properties of regular languages – Equivalence and minimization of Automata.**


**UNIT IV : Normal forms for CFG – Pumping Lemma for CFL – Closure Properties of CFL – Turing Machines – Programming Techniques for TM. A language that is not Recursively Enumerable (RE) – An undecidable problem RE – Undecidable problems about Turing Machine – Post’s Correspondence Problem – The classes P and NP.**

**TEXT BOOK:**


**REFERENCES:**


---

**MSIC316 Digital Image Processing 3 1 0 4 PL.Chithra**

**Unit-I : Introduction – The origin - Fundamental steps components - Image Sampling and Quantization – Some basic relationship between pixels – Linear and nonlinear operations. Image Enhancement in spatial domain – Some Basic Gray level transformation –**
Histogram processing - Enhancement using Arithmetic Logic operations – Basics of spatial filtering – smoothing – sharpening – Image Enhancement in frequency domain
Unit-II: Color Image processing – color models – pseudo color Image processing – Smoothing – Sharpening – Color transformation - Color segmentation
Unit III: Wavelets – Multiresolution Processing – Image compression models – Lossy compression – Image Compression standards
Unit IV: Image segmentation – Edge Linking – Boundary Detection – Thresholding – Region Based segmentation by morphological watersheds

Text book:
Reference:

| MSIC317 | Data Mining and Warehousing | 3 | 1 | 0 | 4 | B. Lavanya |

UNIT I: Why preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.
UNIT II: Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases-Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based
UNIT III: Other Classification Methods- neural network based, genetic algorithm- decision tree – CART-Prediction, Classifier Accuracy-Cluster Analysis-Types of data, Categorization of methods, Partitioning methods, Outlier Analysis- web mining - methods and algorithms-Applications and Trends in Data Mining – Introduction to data mining software and usage.

TEXT BOOK

REFERENCES


Each student will take a specific problem for the Mini Project and solve it using any one of latest tool and submit a report. Further each student will participate in regular group discussion.


Text Books

Reference Books

<table>
<thead>
<tr>
<th>MSIC321</th>
<th>Software Engineering</th>
<th>3</th>
<th>1</th>
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<th>S. Gopinathan</th>
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<th>MSIC322</th>
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<th>4</th>
<th>B. Lavanya</th>
</tr>
</thead>
</table>
Text book:
Bart Baesens, 2014, Analytics in a Big Data World: The Essential Guide to Data Science and Its applications, Wiley India Private Limited

References:
1. Michael Minelli, Michele Chambers, 2013, Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today’s Businesses, Wiley CIO
4. Foster Provost, Tom Fawcett, 2013, Data Science for Business, SPD.

<table>
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<tr>
<th>MSIC323</th>
<th>Project Work</th>
<th>0</th>
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Each student will do a project work and submit report of their work done.

<table>
<thead>
<tr>
<th>MSIE301</th>
<th>Financial Accounting and Analysis</th>
<th>3</th>
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Unit I: Principles of Accounting: Principles of double entry - Assets and Liabilities - Accounting records and systems - Trial balance and preparation of financial statements - Trading, Manufacturing, Profit and Loss accounts, Balance Sheet including adjustments (Simple problems only). Analysis and Interpreting Accounts and Financial Statements: Ratio analysis - Use of ratios in interpreting the final accounts (trading accounts and loss a/c and balance sheet) - final accounts to ratios as well as ratios to final accounts.

Unit II: Break-even analysis and Marginal Costing: Meaning of variable cost and fixed cost - Cost-Volume-Profit analysis – calculation of break even point, Profit planning, sales planning and other decision – making analysis involving break - even analysis - Computer Accounting and algorithm.(differential cost analysis to be omitted)


Reference Books


TEXT BOOK

REFERENCES

Reference sites:
2. www.tutorialspoint.com; www.easywayserver.com; www.download.oracle.com
3. www.java2s.com; www.coreservlets.com

MSIE304 Programming in COBOL

UNIT I: INTRODUCTION: Structure of a COBOL Program- Coding Format for COBOL Programs- Character Set, COBOL words- Data Names and Identifiers- Literal, Figurative Constants- Continuation of lines and notations-divisions and its sections - IDENTIFICATION, ENVIRONMENT, DATA, PROCEDURE.
UNIT II: USING I/O FACILITIES : Basic verbs- Conditional and sequential verbs- writing complete programs-Introduction- Sample program- program testing and style- Types of Clause- Elementary and Group Moves- CORRESPONDING Options.

TEXT BOOK :

REFERENCES:
1. E. Balagurusamy, COBOL Programming –A Self Study Text, MACMILLAN 1999

MSIE305 High Performance Computing


Text books

References

Unit III: Laboratory exercises on the above concepts.

Text Book

References:

MSIE307 Artificial Intelligence &Expert Systems | 3 | 0 | 0 | 3 | Guest Faculty


Unit II: Predicate calculus & Knowledge Representation: Predicate calculus - Answer extraction - knowledge based systems - knowledge processing, inference techniques. Natural language processing and understanding - perception - Learning using Neural nets.


Case study: Mycin.

Text Book:

References
Unit I: Sample spaces - events - Axiomatic approach to probability - conditional probability - Independent events – Bayes’ formula - Random Variables - Continuous and Discrete - distribution function - Expectation, variance, coefficient of variation, moment generation function - Chebyshev's inequality.

Unit II: Bivariate distribution - conditional and marginal distributions – Binomial, Poisson and geometric Distributions - Uniform, Normal, Exponential and Gamma distributions.

Unit III: Correlation - Rank correlation - Linear Regression - Method of Least squares - Fitting of the curve of the form \( ax + b, ax^2 + bx + c, abx \) and \( axb \) - multiple and partial correlation( 3 -variables only). sampling - simple random sampling - Systematic sampling and stratified random sampling - concepts of sampling distributions and standard error - point estimation - Interval Estimation of mean and proportion.

Unit IV: Tests of Hypotheses - Critical Region - Errors - Level of significance - power of the test - Large sample tests for mean and proportion - Exact tests based on Normal, t, F and Chi-square distributions. Basic principles of experimentation - Analysis of variance - one way and two way classifications - computing randomized design - Randomized Block design

1. Text books:
   (iii) Trivedi, K.S, Probability and Statistics with Reliability, Queuing and Computer Science Applications. Prentice Hall India, New Delhi, 1994

2. Reference Books

Unit I: Unix Operating system-History, Structure, General Purpose Utilities-File System -Handling ordinary files. The shell, vi editor, the environment basic files attributes -simple filters.

Unit II: Regular Expression and the grep family-The process-Communication and Electronic mail-SHELL programming.


Text Books:
1. S. DAS, UNIX: Concepts and application, TMH

| MSI E310 | Programming in Dot NET | 2| 1| 0| 3 | GF / M.Sornam |

Unit I: An overview of the .NET framework- Understanding .NET- ADO.NET architecture- An introduction to Visual Studio .NET.

Unit II: Introducing to C#- Literals, variables, data types, operators, expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations, Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exception.


Text Books:

Reference Book

| MSIE311 | Software Project Management & Testing | 3 | 0 | 0 | 3 | Guest Faculty |

Unit-I: Introduction to Software Project Management- Software project versus other types of project- problems- management control- Stakeholders- Requirement Specification – Information and control in organizations Introduction to step wise project planning

Unit: II: Select-identify scope and objectives- waterfall model- v-process model-spiral model- software prototyping- ways of categorizing prototypes- tools- incremental delivery- selecting process model - Software effort estimation- introduction- where-problems with over and under estimates- basis for software estimating- software effort estimation technique- expert judgment-COCOMO -Activity Planning- Objectives

Unit III: Project schedules- projects and activities- sequencing and scheduling activities- sequencing and scheduling problem-job sequencing-n jobs through two machines, two jobs through m-machines and n-jobs through m-machines, PERT and CPM techniques-critical path-Normal path and crash time-Resource allocation-Resource leveling and smoothing.
1. Recommended Texts

2. Reference Books

<table>
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<tr>
<th>MSIE312</th>
<th>Software Quality And Assurance</th>
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<th>MSIE313</th>
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<th>P.Thangavel</th>
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</table>

Unit I: Introduction to Simulation: types of system - Discrete and Continuous Systems - Model of a System - Types of Models - Discrete-Event System Simulation - Steps in a Simulation Study; Simulation Examples.


1. Recommended Texts

2. Reference Books
   (iii) Narsingh Deo, 1979, System Simulation with Digital Computers, Prentice Hall of India.

MSIE314 Computer Aided Design 3 0 0 3 S.Gopinathan/M.Sornam


Unit II: Applications: CAD for LSI/VLSI applications: Device circuit and process modeling for IC technology: optimization techniques in IC design: Design automation, Design for testability: Specific examples. Mechanical Drafting: Basic CAD Two-dimensional drafting, mechanical CAD software, developing a mechanical database, solid modeling. Electrical applications: Advantages of computer graphics systems for electrical design and drafting, CAD as an aid to electrical designers and drafters, production of an electrical schematic or wiring diagram, production of a printed-circuited board design, designing integrated circuits. Piping and Instrumentation diagrams: Setting up the system, applying P and ID, creating the drawing, drawing revisions, text drawing annotation, text revisions, drawing formats, report generation, documentation: Plotters.


UNIT-II: Basic Structural Modeling: Classes, Relationships, Common Mechanisms, and Diagrams, Advanced Structural Modeling: Advanced classes, Advanced relationships, Interfaces, Types and Roles, Packages.


TEXT BOOKS:

REFERENCE BOOKS:
3. A. Kahate, Object Oriented Analysis & Design, TMH, 2004
4. M. Priestley, Practical Object-Oriented Design with UML, 2/e, TMH, 2003

<table>
<thead>
<tr>
<th>Course</th>
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<td>Introduction to Programming in PYTHON</td>
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</table>

Each student will do a project work and submit report of work carried out with sufficient case studies.

Unit I: Expressions, variables, functions, conditionals - Event-driven programming, local and global variables, buttons and input fields - The canvas, static drawing, timers, interactive drawing.

Unit II: Lists, keyboard input, motion, positional/velocity control - Mouse input, more lists, dictionaries, images.

Unit III: Classes, tiled images - Acceleration and friction, spaceship class, sprite class, sound - Sets, groups of sprites, collisions, sprite animation
Text books:


Reference Books.

1. D. M. Beazley Python Essential Reference, 4/e, Addison-Wesley Professional, 2009


<table>
<thead>
<tr>
<th>MSIE322</th>
<th>Functional Programming using Haskell</th>
<th>2</th>
<th>0</th>
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Unit I: The principles and techniques of programming with functions - Purely functional programming languages; recursion.
Unit II: Higher-order functions; reduction models - strictness; type systems.
Unit III: List operations; infinite data structures; Program synthesis and transformation.

Textbook:


References:


| MSI E323 | Cryptography | 3 | 0 | 0 | 3 | P.Thangavel/G.F. |
Unit I: Conventional Encryption: Conventional encryption model – DES –RC 5 –
Introduction to AES - Random number generation. Number Theory: Modular arithmetic –
Euler’s theorem – Euclid’s algorithm – Chinese remainder theorem – Primarily
and factorization
Unit II: Discrete logarithms – RSA algorithm - Public key Cryptography: Principles – RSA
algorithm – key management- Diff – Hellman key exchange - Message Authorization and
Hash functions: Hash functions-Authentication requirements -Authentication function.
Unit III: Message authentication codes –Secure Hash algorithms - Digital Signature and
standard.

Text books:
1. Stallings, W., Cryptography and Network Security Principles and Practice, Pearson

Reference Books:
security practices, PHI, 2005.

MSIE324 Programming in C

UNIT – I: Getting started with C- Constants and Variables - Data types and sizes - Storage
classes – Operators – Expressions - C instructions – Input / Output functions - Decision
Control structures - Case control structure - Loop control structure—Arrays - Strings.
UNIT – II: Functions - Passing values between functions - Function declaration - Structures
and Unions - Bit wise operations –Pointers - Pointers and Arrays
Unit III: Pointers and function - Pointers and Structures - Dynamic memory allocation- File
management - Creating , Processing , Opening and Closing a File , Command line
Arguments.

Text books:

Reference books
3. Gottfried B.S , Programming with C ,2/e, TMH, 1996
Elective Courses offered for other Departments/Schools

<table>
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<td>MSI E319</td>
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Unit II: Introduction to MS-WORD, MS-ACCESS, MS-EXCEL – Creating Recruitment Database and Create Application Table - Creating Tables Using EXCEL - Creating Graphs – MS-ACCESS – Planning and Creating Tables and Using the feature of Chart, Bar Chart, Pie Chart etc. Introduction to Internet – Creating an E-Mail Account using E-mail Service.


Text Book:

Reference Books:

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</table>

UNIT I: INTERNETWORKING WITH TCP / IP: Review of network technologies, Internet addressing, Internet applications - E-mail, Telnet, FTP.


UNIT III: INTRODUCTION TO JAVA: The java programming environment, Fundamental Programming structures, Objects and Classes, Inheritance.

Text Books
REFERENCES