ACADEMIC REGULATIONS

M.C.A. Programmes

Regulation: R16

Applicable for the students admitted from the Academic year 2016-17 onwards

ASCET
AUDISANKARA Originating the Bright Careers

AUDISANKARA
COLLEGE OF ENGINEERING & TECHNOLOGY
An Autonomous Institute Affiliated to JNTUA, Ananthapuram & Accredited by NAAC with 'A' Grade

NH5 Bypass Road, Gudur, SPSR Nellore (Dt.)

www.audisankara.ac.in

ACADEMIC REGULATIONS FOR MCA THREE YEAR REGULAR COURSE

R 1.0 Eligibility for Admission:

The selection for category A and B seats shall be as per APSCHE rules in consonance with government reservation policy.

a) Under Category A: 70% of the seats are filled by participating in ICET counseling.
b) Under Category B: 30% seats are filled on merit basis as per guidelines of (APSCHE).

R 2.0 Semester wise Course Beak-up:

Sem	Theory	Lab	Total Credits
1st	5	3	21
2nd	5	3	21
3rd	5	3	21
4th	5	2+QQA	21
5th	5	2+ Technical Seminar+ Internship	23
6th	-	Project Work	18
Total	25	13+QQA+Seminar+Project Work	125

R 2.1 Course wise break-up for the total credits:

Total Theory Courses : 25 @ 3 credits each = 75
Total Laboratory Courses : 13 @ 2 credits each = 26
Technical Seminar : 1 @ 2 credits each = 2
Internship : 1 @ 2 credits = 2
Project work : 1 @ 18 credits =18

R 3.0 Division of marks for Internal and External assessment:

Course	Marks for Internal Assessment	Marks for External Assessment
Theory Course	40	60
Laboratory Courses	25	50
Technical Seminar	25	50
Internship	25	50
Project work	Grade	Grade

R 4.0 Evaluation Methodology:

R 4.1 Theory Course:

Each theory course will be evaluated for a total of 100 marks, consisting of 40 marks for Continuous assessment and 60 marks for semester end examination. Following is the scheme for continuous assessment:

Scheme for Continuous Assessment:

Assessment Component	Marks	Schedule	Final Marks
Assignment Test#1 (AT#1)	5	After and on Unit#1	80% of first best SE + 20% of second best SE (30M) + AT#1 (5M)+ AT#2 (5M)
Sessional Exam#1 (SE#1)	30	At the end of Unit#1 & 2	
Assignment Test#2 (AT#2)	5	After and on Unit#3	
Sessional Exam#2 (SE#2)	30	At the end of Unit#3 & 4	

4..1 (a) Scheme for SE Marks:

Two Sessional examinations (SE) each for 30 marks with the duration of 90 minutes each will be conducted for every theory course in a semester. The SE marks shall be awarded giving a weightage of 80% in the SE in which the student scores more marks and 20% in the remaining SE.

4.1 (b) Scheme for Assignment Test Marks:

Assignment test#1 shall be conducted for 5M at the end of Unit#1 covering the syllabus of unit#1. Assignment test#2 shall be conducted for 5M at the end of Unit#3 covering the syllabus of unit#3. Questions for Assignment test shall address the topics covered/ extension of the covered topics/Case Studies.

R 4.2 Laboratory Course:

a) Each lab will be evaluated for a total of 75 marks consisting of 25 marks for continuous assessment and 50 marks for semester end lab examination. Out of 25 marks of internal assessment, continuous lab assessment will be done for 15 marks for the day to day performance and 10 marks for the final internal lab assessment. The semester end lab examination for 50 marks shall be conducted by two Examiners, one of them being laboratory class Teacher as internal examiner and an external examiner nominated by the Principal from the panel of experts recommended by HOD.

R 4.3 Internship

All the students shall undergo the summer internship during summer break after 4th semester. The minimum internship period is four weeks and the students have an option of choosing their own industry/area of interest, which may be related to their respective branch or any other service oriented task. A self study report for the internship shall be submitted and evaluated during the 5th semester and will be evaluated for a total of 75 marks consisting of 25 marks for internal assessment and 50 marks for semester end examination. Internal assessment shall be done by the internship supervisor. Semester end examination for 50 marks shall be conducted by two examiners, one of them being internship supervisor as internal examiner and an external examiner nominated by the Principal from the panel of experts recommended by HOD.

R 4.4 Technical Seminar

Technical Seminar shall be conducted in 5th semester. The distribution of internal marks for component of Technical seminar is given below:

Table 5: Distribution of Marks for component of Technical seminar

S. No.	Criterion	Marks
1	Seminar Report & Subject content	20
2	Seminar presentation & Viva – Voce Exam	30

A Technical Seminar shall have two components, one chosen by the student from the course work as an extension and approved by the faculty supervisor. The other component is suggested by the supervisor and can be a reproduction of the concept in any standard research paper or an extension of concept from earlier course work. A hard copy of the information on seminar topic in the form of a report is to be submitted for evaluation along with presentation. The presentation of the seminar topics shall be made before a committee consisting of Head of the department, seminar supervisor and a senior faculty member. Each Technical Seminar shall be evaluated for 100 marks. Technical Seminar component-I for 50 marks and component-II for 50 marks making total 100 marks. (**Distribution of marks for 50:** 10 marks for report, 10 marks for subject content, 20 marks for presentation and 10 marks for queries).

R 4.6 Project Work

All the students shall take up a Project work during 6th semester carrying 18 credits. Projects will be taken up batch wise and batches will be divided as per the guidelines. Every student shall be required to submit thesis or dissertation after completion of satisfactory work on a topic approved by the Project Review Committee.

a. A Project Review Committee (PRC) shall be constituted with the Dean (R &D), Head of the Department and one senior faculty member of the department apart from the Project Supervisor.
b. Registration of Project Work: A student is permitted to register for the project work in the beginning of the sixth semester.
c. Candidate has to submit the title, objective and plan of action of his/her project work in consultation with his/her project supervisor to the Project Review Committee (PRC) for its approval during the fifth semester. After obtaining the approval by the Committee the student can initiate the Project work from the beginning of the sixth semester.
d. Every candidate shall work on projects approved by the PRC of the College. Progress of the work will be reviewed from time to time by the PRC.
e. On completion of the project work the candidate shall submit the draft copy of thesis to the Head of the Department for the approval of PRC and shall make an oral presentation.
f. After the final approval of PRC, four copies of the Project Thesis certified by the supervisor shall be submitted to the Department.
g. The thesis shall be evaluated by one examiner selected by the Chief Controller of examiner from a panel of 5 examiners, who are eminent in that field and nominated by the Head of the department in consultation with the Project supervisors.
h. For the purpose of assessment, the following weightage are given for the continuous assessment and for the final evaluation of the project.
    i. Weightage for Supervisor evaluation - 40 %
    ii. Weightage for PRC evaluation - 10%
    iii. Weightage for External evaluation - 50%

R 5.0 Attendance Requirements:

a) It is desirable for a candidate to put on 100% attendance in all the subjects. However, a candidate shall be permitted to appear for the semester end examination provided s/he maintains a minimum of 75% overall attendance in the semester.

b) The shortage of attendance on medical grounds can be condoned to an extent of 10% provided a medical certificate is submitted to the Head of the Department when the candidate reports back to the classes immediately after the leave. Certificates submitted afterwards shall not be entertained. Condonation fee as fixed by the college for those who put on attendance between ≥ 65% and <75% shall be charged before the end examinations. Attendance may also be condoned as per the State Government rules for those who participate in sports, co-curricular and extra-curricular activities provided their attendance is in the minimum prescribed limits for the purpose and recommended by the concerned authority.

c) In case of the students having over all attendance less than 65% after condonation shall be declared detained and has to repeat semester again.

R 6.0 Promotion Policies:

a) A student shall be promoted to subsequent semester only if s/he fulfills the attendance requirement. In case a student fails to fulfill the attendance requirement, s/he has to repeat the semester in the next academic year.

b) A Student will be promoted from 4^{th} semester to 5^{th} semester if s/he fulfills the academic requirements and earning of minimum of 50% credits up to 4^{th} semester.

R 6.1 Scheme for the award of Grade

a) A student shall be deemed to have satisfied the minimum academic requirements and earn the credits for each theory course, if s/he secures

   i. Not less than 40% marks for each theory course in the semester end exam, and

   ii. A minimum of 40% marks for each theory course considering both internal and semester end examination.

   i. A student shall be deemed to have satisfied the minimum academic requirements and earn the credits for each Lab/ Technical Seminar/Internship/Project, if s/he secures not less than 50% marks for each Lab/ Term Paper/Mini Project/ Project course in the semester end exam,

   and

ii. A minimum of 50% marks for each Lab/ Technical Seminar/Internship/Project course considering both internal and semester end examination.

R 6.2 Graduation requirements:

The following academic requirements shall be met for the award of the MCA. Degree.

a) Student shall register and acquire minimum attendance in all courses and secure 125 credits. However, the CGPA obtained for the best 122 credits shall be considered for the award of Grade/Class/Division.
b) A student of a regular program who fails to earn 193 credits within six consecutive academic years from the year of his/her admission with a minimum CGPA of 4.0 shall forfeit his/her degree and his/her admission stands cancelled.

R 6.3 Award of Degree:

a) Classification of degree will be as follows:
    1. CGPA ≥ 7.5 : First Class with Distinction
    2. CGPA ≥6.5 and < 7.5 : Degree with First Class
    3. CGPA ≥5.5 and < 6.5 : Degree with Second Class
    4. CGPA ≥4.0 and < 5.5 : Degree with Pass Class

b) Degree with Distinction will be awarded to those students who clear all the subjects in single attempt and secure a CGPA ≥ 8.0 during his/her regular course of study.
c) In case a student takes more than one attempt in clearing a course, the final marks secured shall be indicated by * mark in the marks memo.

All the candidates who register for the semester end examination will be issued memorandum of grades by the Institute. Apart from the semester wise marks memos, the institute will issue the provisional certificate subject to the fulfillment of all the academic requirements.

R7.0 Re-Admission Criteria:

A Candidate, who is detained in a year/semester due to lack of attendance/credits, has to obtain written permission from the Principal for readmission into the same semester after duly fulfilling all the required norms stipulated by the college in addition to paying the required fee.

R8.0 Conduct & Discipline:-

(a) Students shall conduct themselves within and outside the premises of the Institute in a descent and dignified manner befitting the students of Audisankara College of Engineering & Technology.

(b) As per the order of the Honorable Supreme Court of India, ragging in any form is considered a criminal offence and is totally banned. Any form of ragging will be severely dealt with.

(c) The following acts of omission and / or commission shall constitute gross violation of the code of conduct and are liable to invoke disciplinary measures with regard to ragging.

  (i) Lack of courtesy and decorum; indecent behavior anywhere within or outside the college campus.

  (ii) Damage of college property or distribution of alcoholic drinks or any kind of narcotics to fellow students / citizens.

(d) Possession, consumption or distribution of alcoholic drinks or any kind of narcotics or hallucinogenic drugs.

(e) Mutilation or unauthorized possession of library books.

(f) Noisy and unruly behavior, disturbing studies of fellow students.

(g) Hacking in computer systems (such as entering into other person's areas without prior permission, manipulation and / or damage of computer hardware and software or any other cyber crime etc.

(h) Usage of camera /cell phones in the campus.

(i) Plagiarism of any nature.

(j) Any other act of gross indiscipline as decided by the college academic council from time to time.

(k) Commensurate with the gravity of offense, the punishment may be reprimand, fine, expulsion from the institute/ hostel, debarring from examination, disallowing the use of certain facilities of the Institute, rustication for a specified period or even outright expulsion from the Institute, or even handing over the case to appropriate law enforcement authorities or the judiciary, as required by the circumstances.

(l) For an offence committed in (i) a hostel (ii) a department or in a class room and (iii) elsewhere, the chief Warden, the concern Head of the Department and the Principal respectively, shall have the authority to reprimand or impose fine.

(m) Cases of adoption of unfair means and/ or any malpractice in an examination shall be reported to the principal for taking appropriate corrective action.

(n) All cases of serious offence, possibly requiring punishment other than reprimand, shall be reported to the Academic council of the college.

(o) The Institute Level Standing Disciplinary Action Committee constituted by the academic council shall be the authority to investigate the details of the offence, and recommend disciplinary action based on the nature and extent of the offence committed.

(p) The Principal shall deal with any problem, which is not covered under these rules and regulations.

(q) **"Grievance and Redressal Committee" (General)** constituted by the Principal shall deal with all grievances pertaining to the academic / administrative / disciplinary matters.

(r) All the students must abide by the code and conduct rules prescribed by the college from time to time.

R9.0 Transitory Regulations:

A student, who is detained or discontinued in the year/semester, on readmission shall be required to do all the courses in the curriculum prescribed for such batch of students in which the student joins subsequently.

R9.1 A student who is following the JNTUA, Anantapur curriculum/R13 regulations, detained due to lack of credits/ attendance at the end of the any semester of any year, shall join the forthcoming autonomous/ R13 batch (es) (which ever applicable) after fulfilling the requirements. Such students will study all the courses prescribed for that batch, in which the student joins. The student has to clear all backlog subjects if any by appearing in the supplementary examinations of JNTUA/R13 for the award of degree. The class will be awarded based on the academic performance of a student. Such candidates will be considered on par with R13 stream and will be governed by the regulations applicable.

R9.2 A student who is following the JNTUA, Anantapur curriculum/R13, detained due to lack of credits/ attendance at the end of any semester, shall join the autonomous batch at the appropriate semester. Such candidates shall be required to pass in all the courses in the Programme prescribed by concerned BoS for such batch of students, to be eligible for the

award of degree. However, exemption will be given in all those courses of the semester(s) of the batch, which the candidate joins now, which he had passed earlier. The student has to clear all his backlog subjects by appearing in the supplementary examinations, conducted by JNTUA, Anantapur and College (Autonomous Stream) for the Award of Degree. The class will be awarded based on the academic performance of a student in the JNTUA Pattern and academic regulations of JNTUA will be followed.

General:

a) s/he represents "she" and "he" both
b) Where the words 'he', 'him', 'his', occur, they imply 'she', 'her', 'hers' also.
c) The academic regulations should be read as a whole for the purpose of any interpretation.
d) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council will be final.

The college may change or amend the academic regulations or syllabi from time to time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the institute.

Course Structure for MCA (Master of Computer Applications) Regular Programme

Applicable for students admitted from 2016-17 Academic Year

MCA 1st Semester – Master of Computer Applications

S.No	Code	Course	L	T	P	C
1	16MC1101	Problem Solving through "C" Programming	3	1	0	3
2	16MC1102	Computer Organization	3	1	0	3
3	16MC1103	Discrete Structures and Graph Theory	3	1	0	3
4	16MC1104	Probability and Statistics	3	0	0	3
5	16MC1105	Accounting and Financial Management	3	0	0	3
6	16MC2106	C Programming Lab	0	0	3	2
7	16MC2107	Computer Organization Lab	0	0	3	2
8	16MC2108	I.T Workshop and Accounting Lab	0	0	3	2
		TOTAL	**15**	**3**	**9**	**21**

MCA 2nd Semester – Master of Computer Applications

S.No	Code	Course	L	T	P	C
1	16MC1201	Design and Analysis of Algorithms	3	1	0	3
2	16MC1202	OOPs through C++	3	1	0	3
3	16MC1203	Data Structures	3	1	0	3
4	16MC1204	Principles of Programming Languages	3	0	0	3
5	16MC1205	Organization Structures and Personnel Management	3	0	0	3
6	16MC2206	C++ Programming Language Lab	0	0	3	2
7	16MC2207	Data Structures Lab	0	0	3	2
8	16MC2208	Corporate Soft Skills Lab	0	0	3	2
		TOTAL	**15**	**3**	**9**	**21**

MCA 3rd Semester – Master of Computer Applications

S.No	Code	Course	L	T	P	C
1	16MC1301	Database Management Systems	3	1	0	3
2	16MC1302	JAVA Programming	3	1	0	3
3	16MC1303	Operating Systems	3	1	0	3
4	16MC1304	Software Engineering	3	0	0	3
5	16MC1305	Data Communication and Networks	3	0	0	3
6	16MC2306	Database Management Systems Lab	0	0	3	2
7	16MC2307	JAVA Programming Lab	0	0	3	2
8	16MC2308	Operating Systems Lab (LINUX)	0	0	3	2
		TOTAL	**15**	**3**	**9**	**21**

MCA 4th Semester – Master of Computer Applications

S.No	Code	Course	L	T	P	C
1	16MC1401	Object Oriented Analysis and Design	3	1	0	3
2	16MC1402	Advanced JAVA Programming	3	1	0	3
3	16MC1403	Data Warehousing and Data Mining	3	1	0	3
4	**ELECTIVE-I**					
	16MC1404	Optimization Techniques	3	0	0	3
	16MC1405	Software Testing				
	16MC1406	Design Patterns				
5	**ELECTIVE-II**					
	16MC1407	Image Processing	3	0	0	3
	16MC1408	Neural Networks and Fuzzy Logic				
	16MC1409	Network Security and Cryptography				
6	16MC1410	Qualitative and Quantitative Analysis	2	0	0	2
7	16MC2411	Advanced JAVA Programming Lab	0	0	3	2
8	16MC2412	Data Mining and OOAD Lab	0	0	3	2
		TOTAL	**17**	**3**	**6**	**21**

MCA 5th Semester – Master of Computer Applications

S.No	Code	Course	L	T	P	C
1	16MC1501	Mobile Application Development	3	1	0	3
2	16MC1502	Big- Data Technologies	3	1	0	3
3	16MC1503	Wireless Networks	3	1	0	3
4	**ELECTIVE-III**					
	16MC1504	Cloud Computing	3	0	0	3
	16MC1505	Advanced Database				
	16MC1506	E-Commerce				
5	**ELECTIVE-IV**					
	16MC1507	Middleware Technologies	3	0	0	3
	16MC1508	Information Retrieval Systems				
	16MC1509	Software Project Management				
6	16MC2510	Mobile Application Development Lab	0	0	3	2
7	16MC2511	Big- Data Technologies Lab	0	0	3	2
8	16MC2512	Seminar	0	0	2	2
9	16MC2513	Internship	0	0	0	2
		TOTAL	**15**	**3**	**8**	**23**

MCA 6th Semester – Master of Computer Applications

S.No	Code	Course	L	T	P	C
1	16MC2601	Project Work	0	0	0	18
		TOTAL	**0**	**0**	**0**	**18**

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 1st Semester

L	T	P	C
3	1	0	3

16MC1101 PROBLEM SOLVING THROUGH "C" PROGRAMMING

COURSE OUTCOMES:

At the end of the course students are able to

1 Design algorithmic solution to problems.
2 Acquire knowledge about the basic concept of writing a program.
3 Understand the role of constants, variables, identifiers, operators, and type conversions of C Language.
4 Design programs Decision making and utilizing repetition.
5 Design modular programs using functions.
6 Concept of Array and pointers dealing with memory management.
7 Structures and unions through which derived data types can be formed.

UNIT-I

Introduction to Computers and Programming:

Definition, Block diagram along with computer components, Characteristics & classification of computers, Types of programming languages. **Problem solving:** Top-down design, implementation of algorithms, Flow charts.

Introduction to C Language – History of C, Features of C, General form of a C Program, Character set in C, C-Tokens, Data types, Expression Evaluation, Operators and Expressions, Type Conversions, Formatted Input and Output.

UNIT-II

Control Statements and Functions:

Decision Statements: If, if-else, Nested if and switch Statements, Loop Control Statements - while, for, do-while Statements, Nested Loops, and Other Related Statements - break, continue, goto.

Functions: Function prototype, Definition and accessing, Passing arguments to a function, Library Functions, Scope of a function, Storage Classes - Auto, Register, Static, Extern, Scope rules, Type qualifiers, Recursion - Recursive functions, C Preprocessor, Header files.

UNIT-III

Arrays, Pointers and Strings:

Arrays: Introduction, 1-Dimensional, 2-dimensional array, Declaration, Initialization and Accessing, Multidimensional Arrays.

Pointers: Introduction, Features of Pointers, Pointer Declaration, Arithmetic Operations with Pointers, Pointers and Arrays, Array of Pointers, Pointers to Pointers, Void Pointers, Memory Allocation Functions, Pointer to Functions, Command- Line Arguments.

Strings: String Basics, String Handling Functions.

UNIT-IV

Structure and Union:
Structure and Union: Introduction, Features of structure, Declaration and Initialization of Structure, Structure within Structure, Array of Structures, Pointer to Structure, self referential Structures, Structures and Functions, type def and Enumerated data types, Unions, Bit fields.
Files: Introduction, Streams and file types, File operations.

TEXT BOOKS:

1 Jeri R Hanly, Elliot B. Koffman, Ashok Kamthane, A. Ananda Rao, Programming in C and data structures, Pearson Education.
2 Byron S Gottfried, Jitender Kumar Chabra, Programming with C, , Third Edition, McGraHill Pvt. Ltd.

REFERENCE BOOKS:

1 R. G. Dromey, How to Solve it by Computer, Person Education,2008
2 B.A.Forouzan and R.F. Gilberg, C Programming & Data Structures, Third Edition, Cengage Learning,2000
3 Stephen G. Kochan, Programming in C –III Edition, Pearson Educataion,2004.
4 J.A. Jones & K. Harrow ,C Programming with problem solving, Dreamtech Press
5 Harry H. Cheng,C for engineers and scientists an interpretive approach, , McGraHill International Pvt. Ltd
6 E.Balagurusamy, C Programming & Data Structures, TMH,2009.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 1st Semester

L	T	P	C
3	1	0	3

16MC1102 COMPUTER ORGANIZATION

COURSE OUTCOMES:

At the end of the course students are able to

1 Evaluate the number system conversion problems.
2 Acquire the knowledge about simplifying the circuits by different methods.
3 Understand the basic organization of Computer system and its Instructions.
4 Learn the instructions to write assembly language program.
5 Analyze the Pipeline processing and DMA Techniques.
6 Understand the usage different memories in system.

UNIT-I

Digital Fundamentals: Computer types, Functional units, Number Systems and Conversions– Boolean Algebra and Simplification– Minimization of Boolean Functions– Karnaugh Map, Logic Gates–NAND–NOR Implementation.

UNIT-II

Combinational and Sequential Circuits: Adders, Subtracters, Encoder, Decoder, Multiplexer, Flip Flops.
Basic CPU Organization: Introduction to CPU, Addressing modes, Instruction formats-Zero, one, two, and three address instructions, Instruction cycle

UNIT-III

Peripheral devices, Input-Output interface, Asynchronous, data transfer, Modes of transfer, Priority interrupt, Direct Memory Access, Input-Output Processor (IOP).
Direct memory Access: DMA Controller, DMA transfer.

UNIT-IV

Memory Organization: Memory hierarchy, Cache memories, Main Memory, Secondary storage, Performance considerations, Virtual memories.
Parallel Processing: Parallel processing, Pipelining, Arithmetic pipeline, Instruction pipeline, Vector processing.

TEXT BOOKS:

1 Computer System Architecture, M. Morris Mano, 3rd Edition, PHI/Pearson Education,2008.
2 Microprocessors and Interfacing, Douglas Hall, Tata McGraw-Hill

REFERENCE BOOKS:

1 Computer Organization, Carl Hamacher, ZvonkoVranesic, SafwatZaky, Vth Edition, McGraw Hill
2 Fundamentals of Computer Organization and Design, SivaramaP.Dandamudi, Springer Int. Edition.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 1st Semester

L	T	P	C
3	1	0	3

16MC1103 DISCRETE STRUCTURES AND GRAPH THEORY

COURSE OUTCOMES:

At the end of the course students are able to

1. Study the fundamental discrete mathematical structures used in computer science and express statements with the precision of formal logic and analyze arguments to test their validity.
2. Remember the basic properties and operations related to sets, relations and functions
3. Study the basic properties related to groups, semi groups, monoids, homomorphism and isomorphism.
4. Apply the formulas of Combinatory in different problems.
5. Analyze the recursive definitions.
6. Understand the basic definitions of graph theory and properties of graphs.

UNIT-I

Mathematical Logic: Statements and notations, connectives, Well formed formulas, tautologies, Equivalence of formulas, Duality law, Tautological Implications, Other connectives, Normal forms, Rules of inference, Consistency of premises and Indirect method of proof.

Predicates: Predicates, Variables and quantifiers, Predicate formula, Free and bound variables, inference theory of the predicate calculus.

UNIT-II

Relations: Properties of binary relations, equivalence relations, compatibility relations, partial ordering relations, Hasse diagrams.

Functions: Inverse functions, composition of functions, recursive function, Lattices, The pigeon-hole principle.

Algebraic Structures: Algebraic system examples and general properties, semi groups and monoids, groups, subgroups, homomorphism, isomorphism

UNIT-III

Combinatorics: Basics of counting, Combinations and permutations, Enumeration of Combinations and permutations , Enumerating Combinations and permutations with repetitions, Enumerating permutations with constrained repetitions, binomial coefficients, The binomial and Multinomial theorems , The principle of inclusion- exclusion.

Recurrence Relation: Generating functions of sequences, calculating coefficients of generating function, recurrence relation, solving recurrence relations by substitution and generating functions, methods of characteristics roots.

UNIT-IV

Graphs: Introduction to graphs, types of graphs, graph basic terminology and special types of simple graphs, representation of graphs and graph isomorphism, Spanning Tree, graph traversal techniques (BFS & DFS) ,Minimum Spanning Tree Algorithms, Euler paths and circuits, Hamiltonian paths and circuits, planar graphs, Euler's formula, graph coloring.

TEXT BOOKS:

1 J.P.Trembly, R.Manohar(1997), Discrete Mathematical Structures with Applications to Computer Science, Tata McGraw Hill, India
2 KennethH. Rosen, Discrete Mathematics and its Applications, 6th edition, TataMcGrawHill,India.

REFERENCE BOOKS:

1 C.L.Liu, D.P.Mohapatra (2008), Elements of Discrete Mathematics, 3rd edition, McGrawHill, India. Ralph P.Grimaldi and B.V.Ramana(2006),
2 Discrete and Combinatorial Mathematics-an Applied Introduction, 5th edition, Pearson Education, India.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 1st Semester

L	T	P	C
3	0	0	3

16MC1104 PROBABILITY AND STATISTICS

COURSE OUTCOMES:

At the end of the course students are able to

1 Gain the concepts of normal distributions and sampling distribution.
2 Apply the knowledge of normal and sampling distribution to various practical situations using normal tables.
3 Test the hypothesis of various Engineering problems.
4 Investigate the small samples using χ^2-and t – tests.
5 Get the concept of F – test.
6 Analyze various industrial applications using Analysis of variance.
7 Apply various control charts to quality control tests.

UNIT-I

Distributions: Binomial, Poisson and normal distributions –Properties of normal distribution – Areas under normal curve – Population and Sample- Sampling distributions of means (with and without replacement).

UNIT-II

Test of Hypothesis and Large Sample Tests: Statistical Hypothesis – Tests of Significance - Null and Alternative hypotheses –Types of errors - Level of Significance – Critical values and region – One and two tailed tests – Procedure for hypothesis testing - Testing of significance of means and proportions.

UNIT-III

Small samples tests: Degrees of freedom - Chi – square test - χ^2- test for goodness of fit - 2×2 contingency table - Student's t – distribution – testing of single mean and difference of means- F – test.

UNIT-IV

ANOVA& SQC: AN0VA - One and Two – way classifications.
Introduction – Chance and assignable causes of variation – Process and product control – Control charts -$\overline{x}$ and R, $\overline{x}$ and σ charts – p, np and c charts.

TEXT BOOKS:

1 Fundamentals of Statistics – S. C. Gupta –Himalaya Publications (6th revised and enlarged edition).
2 Probability and statistics by Dr.T.K.V.Iyengar - S Chand &Co-Revised edition.

REFERENCE BOOKS:

1 Higher Engineering Mathematics - Dr. B.S. Grewal - Khanna Publication (42nd edition).
2 Probability & Statistics – E. Rukmangadachari & E. Keshava Reddy – Pearson Education – Revised edition.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 1st Semester

L	T	P	C
3	0	0	3

16MC1105 ACCOUNTING AND FINANCIAL MANAGEMENT

COURSE OUTCOMES:

At the end of the course students are able to

1. Study various types of accounts and identify different accounting principles.
2. Create financial statements in accordance with Generally Accepted Accounting Principles.
3. Analyze financial statements using standard financial ratios of liquidity, activity, debt, profitability and market value.
4. Understand the organization financial functions and objectives.
5. Apply techniques for estimating the cost of each component of the cost of capital and understand how to assemble this information into a cost of capital.
6. Evaluate the capital budgeting and resource allocation.

UNIT-I

Introduction to Accounting: Accounting Principles, Double Entry System of Accounting, Classification of Accounts.

Financial Statements: Introduction to basic books of accounts, Journal and ledger, Trial balance, Preparation of final accounts - Trading account, Profit and Loss account and Balance sheet (with small adjustments).

UNIT-II

Introduction to Financial Management: Meaning and scope, Goals & Objectives, Role of financial manager, Sources of finance, Goals of financial management, Time value of money, Leverages: Operation, Financial leverage and combined leverage. (Simple problems)

Capital structure, Cost of capital: Cost of equity, Preference shares and bonds –Weighted average cost of capital.(Simple problems)

UNIT-III

Financial Analysis Through Ratios: Ratio Analysis, Classification of ratios – Short term solvency and Long term solvency – Profitability ratios- Analysis and interpretation of Financial Statements. (Simple problems)

Funds Flow analysis: Meaning, Importance, Statement of changes of working capital, Statement of sources and Application of Funds (Simple problems).

UNIT-IV

Break Even Analysis: Concept of Break Even Point, Cost –Volume –Profit analysis, Determination of Break Even Point, Margin of Safety and P/V ratio. (Simple problems)

Capital Budgeting: Capital and its significance, types of capital, Estimation of fixed and

working capital requirements, Methods and sources of raising capital. Capital budgeting: Features proposals, Methods of capital budgeting, Payback method, Accounting Rate of Return (ARR), Net Present Value Method (NPV). (Simple problems)
Codes/Tables: Present Value Tables need to be permitted into the examination Hall.

TEXT BOOKS:

1 Financial accounting - Dr.S.N.Maheswari. Sultan Chand publications,2009.
2 Financial Management – Sundhindra Bhat ,Excel publications:2009.

REFERENCE BOOKS:

1 Financial Management - Prasanna Chandra, TMH, New Delhi.
2 Financial Management - I M Pandey, Vikas Publishing House, New Delhi.
3 Financial Management and Policy - Van Horn, James c., Prentice Hall of India
4 Financial Statement Analysis, Khan and Jain, PHI, 2009
5 Accounting and Finance, Jai Bharat publications Prof. K.RajeswaraRao & Prof. G.Prasad.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 1st Semester

L	T	P	C
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16MC2106 C PROGRAMMING LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand the basic concept of C Programming, and its different modules that include conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
2 Role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
3 Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
4 Role of Functions involving the idea of modularity.
5 Concept of Array and pointers dealing with memory management.
6 Structures and unions through which derived data types can be formed.
7 File handling for permanent storage of data or record.

List of Experiments:

1: Programs on Expressions.

2: Programs on decision control statements.

3: Programs on loop statements.

4: Programs to implement on functions.

5: Programs to implement on parameter passing techniques.

6: Programs using recursion.

7: Programs using arrays.

8: Programs to implement string handling functions.

9: Programs to implement on pointers.

10: Programs to implement on structures.

11: Programs on files.

12: Programs on command line arguments.

TEXT BOOKS:

1 Ashok N.Kamthane, Programming with ANSI and Turbo C,
2 R.G.Dromey , How to Solve it by Computer, Prentice Hall Of India Ltd, New Delhi.
Pearson Education, New Delhi.

REFERENCE BOOKS:

1 M.Cooper, The Spirit of C, an Introduction to modern programming, Jaico publishing House
2 Ashok N.Kamthane, Programming with ANSI and Turbo C,pearsons Education, NewDelhi.
3 Byrons Gottfried , Programming with C, Schaum's Outline series, Tata McGraw Hill. Publishing Company, NewDelhi.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 1st Semester

L	T	P	C
0	0	3	2

16MC2107 COMPUTER ORGANIZATION LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand the basic concepts of MASM-6.11.
2 Understand how to work in the area of electronic design and assembly language programming of small, dedicated computers.
3 Acquire the knowledge on assembly language programs using assemblers.
4 Analyze, Write programs & implement microprocessor based system in both hardware & software**.**

List of Experiments:

1: Introduction to MASM/TASM.

2: Write an Assembly Language Program to display simple text message.

3: Write an Assembly Language Program to Read and Display the character.

4: Write an Assembly Language Program to perform Arithmetic Operations on two Decimal numbers.

A) Addition B) Subtraction C) Multiplication D) Division

5: Write an Assembly Language Program to print Upper case letters from A to Z.

6: Write an Assembly Language Program to print Digits from 0 to 9.

7: Write an Assembly Language Program to find length of the String.

8: Write an Assembly Language Program to Reverse the Given String.

9: Write an Assembly Language Program to Concatenation of two Strings.

10: Write an Assembly Language Program to find 1's Complement of a digit.

11: Write an Assembly Language Program to find Factorial of a given number.

12: Write an Assembly Language Program to check the given number is Even or Odd.

REFERENCE BOOKS:

1 IBM PC Assembly Language and Programming, P. Abel, 5th Edition, PHI/Pearson Education.
2 Introduction to Assembly Language Programming, Sivarama, P.Dandamudi, Springer Int. Edition, 2003.
3 The 8088 and 8086 Microprocessors: Programming, Interfacing, Software, Hardware and Application, 4th edition, W.A.Triebel, A.Singh, N.K.Srinath, Pearson Edition.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 1st Semester

L	T	P	C
0	0	3	2

16MC2108 I.T WORKSHOP AND ACCOUNTING LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand the need of PC Hardware, internet & World Wide Web and office suites.
2 Learn how to use different software's.
3 Analyze the need of PC Hardware, Internet & World Wide Web and Office suites
4 Install and use different software like Windows XP, Linux, and MSOffice suite component.
5 Understand the basic accounting concepts and principles.
6 Create Accounting and inventory masters, Vouchers and basic reports in tally.
7 Generate the accounting balance sheet in tally.

List of Experiments:

PC Hardware:

1: Identify the peripherals of a computer, Components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva. Execution of Basic Linux Commands.

5: Hardware Troubleshooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

6: Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Internet & World Wide Web:

7: Orientation & Connectivity Boot Camp: Students should get connected to their Local

Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

8: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

MS Word:

9&10: The mentor needs to give an overview of Microsoft (MS) word 2007: Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word. Give a task covering to create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Inserting table, using Drawing toolbar in word.

MS Excel:

11&12: The mentor needs to tell the importance of MS office 2007 Excel as a Spreadsheet tool covering Accessing, overview of toolbars, saving excel files, Using help and resources., Also give a task that is covering the features like Gridlines, Format Cells, Summation, auto fill, Formatting Text.

MS Power Point:

13&14: Students will be working on MS power point that helps them create basic power point presentation. Topics covered during this Exercise include :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in Power point. Students shall be given a model power point presentation which needs to be replicated (exactly how it's asked).

COMPUTERIZED ACCOUNTING TALLY LAB

15: Creation of company, Accounts Configuration, Classification of Accounts using Tally.

16: Accounts Masters, Accounts Voucher-Voucher Entry, conversion, Interest Calculation, Printing of voucher using Tally.

17: Create a Contra Voucher, Payment and Receipt Voucher using Tally.

18: Create Sales and Purchase Voucher, Credit notes and Debit notes using Tally.

19: Create Trading Account, Profit / Loss Account, Balance Sheet using Tally.

REFERENCE BOOKS:

1 Accounting with Tally 9.0 by Dinesh Maidasani, laxmi publications.
2 Financial Accounting on Computers Using Tally By Namrata Agrawal
3 Comdex Information Technology course tool kit Vikas Gupta, WILEY Dream tech
4 The Complete Computer upgrade and repair book,3rd edition Cheryl A Schmidt, WILEY Dreamtech
5 Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
6 PC Hardware and A+Handbook – Kate J. Chase PHI (Microsoft)
7 LaTeX Companion – Leslie Lamport, PHI/Pearson.
8 IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinsen and Ken Quamme. – CISCO Press, Pearson Education.
9 Trouble shooting, Maintaining and Repairing PCs, S.J.Bigelow, 5thedition, TMH.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 2nd Semester

L	T	P	C
3	1	0	3

16MC1201 DESIGN AND ANALYSIS OF ALGORITHMS

COURSE OUTCOMES:

At the end of the course students are able to

1. Analyze the asymptotic runtime complexity of algorithms for real world problems developed using different algorithmic methods.
2. Find the optimal solutions by using advanced design and analysis of algorithm techniques like greedy method and dynamic programming.
3. Apply the search space and optimization problem techniques like backtracking and branch and bound method to solve problems optimally where advanced algorithm design techniques fail to find solution.
4. Distinguish the problems and its complexity as polynomial and NP problems and can formulate some real world problems to abstract mathematical problems.

UNIT-I :

Introduction: Algorithm Specification, Performance Analysis-space complexity, time complexity, Asymptotic notation: big oh notation, omega notation, theta notation, and little- oh notation.

Disjoint Sets: Disjoint set operations, union and find algorithms, connected components and spanning trees, bi-connected components.

UNIT-II:

Divide and Conquer: General method, binary search, quick sort, merge sort, Stassen's matrix multiplication.

Greedy Method: General Method, job sequencing with deadlines, knapsack problem, minimum cost spanning trees, single source shortest paths.

UNIT-III:

Dynamic Programming: General method, matrix chain multiplication, optimal binary search trees, 0/1 knapsack problem, All pairs shortest paths, travelling sales person problem, reliability design.

Backtracking: General method, n-queens problem, sum of subsets, graph coloring, Hamiltonian cycles.

UNIT-IV:

Branch and Bound: General method, travelling sales person problem, 0/1 knapsack problem.

P, NP and NP-Complete Problems: P and NP problems, NP-complete problems, non deterministic algorithms, cook's theorem.

TEXT BOOKS:

1 Ellis Horowitz, "Sartaj Sahni and Sanguthevar Rajasekaran", Fundamentals of Computer Algorithms, Galgotia, 2004.
2 Allen Weiss, "Data structures and Algorithm Analysis in C++", 2nd Edn, Pearson Education, 1996.

REFERENCE BOOKS:

1 Parag Himanshu Dave, Himanshu BhalchandraDave, "Design and Analysis algorithms", Pearson.
2 M.T. Goodrich, Robert Tamassia, "Algorithm design: Foundations, Analysis and Internet examples" Wiley student Edn, John Wiley & sons.
3 Aho, Ullman and Hopcroft, "Design and Analysis of Algorithms", Pearson Education.
4 Richard Johnson Baugh, and Marcus Schaefer, "Algorithms", Pearson Education.
5 T H Cormen, C E Leiserson, and R L Rivest, Introduction to Algorithms, 2nd Edn, Pearson Education.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 2nd Semester

L	T	P	C
3	1	0	3

16MC1202 OOPS THROUGH C++

COURSE OUTCOMES:

At the end of the course students are able to

1 Differentiate between structures oriented programming and object oriented programming.
2 Understand and apply various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using C++ language.
3 Apply concepts of operator overloading, constructors and destructors.
4 Apply exception handling and use built-in classes from STL.
5 Understand the file concepts.

UNIT-I :

Programming Paradigms: Disadvantages of Conventional programming, Object-Oriented Programming, Key concepts of Object oriented programming, Advantages of OOP, Object-Oriented Languages, Object based languages. Evolution of C++.

C++ Declarations: Parts of a C++ program, Tokens, Data Types – Basic, derived, User defined, void. Variable Declaration and Initialization, Dynamic Initialization of variables, Reference variables, Constants, operators, Memory management operators, cin and cout statements.

Control Structures- if-else, Nested if-else, jump, goto, break, continue, while, do-while, for, switch-case.

UNIT-II:

Functions: Introduction, main () function, parts of functions, passing parameters, Return by reference, default arguments, inline functions, function overloading, precautions with overloading.

Class Overview: Structures in C and C++, classes in C++, class declaration, Access specifiers, Defining, Member functions, Object creation, Memory allocation to class members, Accessing of class members. Static Class Members: Static member variables, Static Member Functions, static objects. Passing objects as arguments, Returning objects, Friend functions

UNIT-III:

Generic Programming with Templates: Need of templates, Function templates, Function templates with more arguments, Overloading of Template Functions, Class templates, Class templates with more arguments, Guidelines for templates.

Constructor and Destructor: Characteristics, Constructors with arguments, Constructors with default arguments, Copy Constructor, Constructor overloading, Destructors, Dynamic Initialization using constructors, Recursive Constructor.

Operator Overloading: Operator Overloading Fundamentals, Operator function, Overloading unary and binary operators, type conversions, Rules for overloading operators.

UNIT-IV:

Inheritance: Base class & derived class, Access specifiers and simple inheritance , types of inheritance- single, multi level, multiple, Hierarchical, hybrid, multipath, virtual base classes, Constructor and destructor in derived class. Advantages and disadvantages of Inheritance.
Polymorphism: Binding in C++, Pointer to derived class objects, Virtual functions – Runtime polymorphism using virtual functions, pure virtual functions, and Abstract classes.
Exception handling: Principles, keywords. Exception Handling Mechanism
I/O Streams: Console I/O-Unformatted I/O and formatted I/O, File I/O-opening and closing a file.

TEXT BOOKS:

1 Ashok N. Kamthane, Object Oriented Programming with C++, Pearson Education, India, 2003.
2 Herbert Schildt, C++ the Complete Reference, Third edition, Tata McGraw Hill, 1999.

REFERENCE BOOKS:

1 Barkakatin, objects oriented programming in C++, PHI, 1995.
2 Lafore, Object Oriented Programming in C++, Fourth Edition, PEARSON EDUCATION.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 2nd Semester

L	T	P	C
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16MC1203 DATA STRUCTURES

COURSE OUTCOMES:

At the end of the course students are able to

1 Apply Concepts of Stacks, Queues and Linked Lists.
2 Develop Programs for Sorting.
3 Interpret concepts of trees.
4 Select appropriate searching algorithms.
5 Develop programs for Trees.

UNIT-I :

Introduction to data structures, Types, Operations.
Stacks: Introduction, Stack operations, Applications.
Queues: Introduction, Operations on queues, circular queues, Priority queues, Applications.

UNIT-II:

Linked lists: Introduction, Singly linked lists, circular linked lists, Doubly linked lists, Multiply linked lists, applications.
Implementation of Stack and Queue using linked list.

UNIT-III:

Sorting: Introduction, Selection sort, Bubble sort, Insertion sort, Merge sort, Quick sort, Heap Sort
Searching: Introduction, Linear search, Binary search, Fibonacci search.

UNIT-IV:

Trees: Introduction, Definition and basic terminologies, Representation of trees.
Binary Trees: Basic terminologies and types, Binary tree traversals, Applications.
Binary search trees, Balanced Trees, AVL trees, Splay Trees.

TEXT BOOKS:

1 Ananda Rao Akepogu, Radhika Raju Palagiri, Data Structures and Algorithms Using C++, Pearson, 2011.
2 Mark Allen Weiss, Data Structures and Algorithm Analysis in C++, Third Edition,Pearson Education

REFERENCE BOOKS:

1 G.A.V PAI, Data Structures and Algorithms, Concepts, Techniques and Applications, Volume1, 1stEdition, Tata McGraw-Hill, 2008.
2 Richard F. Gilberg & Behrouz A. Forouzan, Data Structures, Pseudo code Approach with C, 2ndEdition, Cengage Learning India Edition, 2007.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 2nd Semester

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3	0	0	3

16MC1204 PRINCIPLES OF PROGRAMMING LANGUAGES

COURSE OUTCOMES:

At the end of the course Student are able to

1 Express computational solutions in the main programming idioms.
2 Select an appropriate programming language for solving a computational problem, with justification.
3 Know and understand the principal programming abstractions.
4 Know and understand the functional programming language.

UNIT-I :

Preliminaries: Concepts of Programming Languages, programming domains, Language Evaluation Criteria, Influences on Language design, Language Categories, Language design Trade-offs.

Imperative Programming: Introduction**,** Names, Variables, The concept of Bindings, Type Checking, strong typing, type compatibility, Scope and life time.

UNIT-II:

Data Types: Introduction, Primitive Data Types, Character String Types, User-Defined Ordinal Types, Array Types, Associative Array s, Record Types, Union Types, and Pointer Types.

Expressions and assignment Statements: Introduction, Arithmetic Expressions, Overloaded Operators, Type Conversions, Relational and Boolean Expressions, Short-Circuit Evaluation, Assignment Statements, Mixed-mode Assignment.

UNIT-III:

Statement-Level Control Structures: Introduction, Selection Statements, Iterative Statements, Unconditional Branching; Subprograms- Introduction, Fundamentals of sub-programs, Design issues for subprograms, Local Referencing Environments, Parameter-passing Methods**.**

Abstract Data Types: Concept of Abstraction, Introduction to data abstraction, design issues for abstract data types, Parameterized Abstract data types.

UNIT-IV:

Functional Programming Languages: Introduction, Fundamentals of Functional programming languages, LISP, ML, Haskell.

Logic Programming Languages: Introduction, A Brief Introduction to Predicate Calculus, Predicate Calculus and Proving Theorems, An Overview of Logic Programming, The

Origins of Prolog, The Basic Elements of Prolog, Applications.

TEXT BOOKS:

1 Robert W.Sebesta," Concepts of Programming Languages", Eighth Edition, Pearson Education.
2 Terrence W.Pratt & Mervin V.Zelkowitz, "Programming Languages Design and Implementation", Fourth Edition, Pearson Education (2008).

REFERENCE BOOKS:

1 Kenneth C.Louden, "Programming Languages Principles and Practice", Second Edition.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 2nd Semester

L	T	P	C
3	0	0	3

16MC1205 ORGANIZATION STRUCTURES AND PERSONNEL MANAGEMENT

COURSE OUTCOMES:

At the end of the course Student are able to

1. Understand the nature and purpose of organization and describe the main departments or functions of a business organization.
2. Study the Decision process approaches, essence of personnel management, its objectives and basic terms.
3. Understand the methods of recruitment, selection process and training methods.
4. Understand the importance of decision making in career choices, analyze and participate in the decision making process as a personnel department employee.
5. Study the organizational factors that are necessary groundwork for a successful Six Sigma effort.
6. Analyze in-depth knowledge on various tools and techniques of quality management.

UNIT-I :

Introduction to Management: Concepts of Management– nature, Importance and functions and theories of management, Systems approach to management, Social responsibilities of management.

Introduction to Organization: Designing Organizational structures: Basic concepts related to Organization – Departmentation and Decentralization, Types and evaluation of mechanistic and structures of organization and suitability.

UNIT-II:

Decision Process Approach: Parts of organization system, development of corporate strategy, Dynamics of decision, Role of system. Types of models: Mathematical planning models, Deterministic and probabilistic models.

Personnel Management: Evolution, objectives, Personnel policies. Personnel management vs HRM, Position of the personnel department in the organization, Role of personnel manager as line manager and staff manager.

UNIT-III:

Man Power Planning: Need-strategies and limitations, Manpower inventory, Manpower forecasting, Job description, Job specification, Recruitment and selection, Interviewing techniques, Transfers and promotion policies.

Training and Development: Objectives and policies planning, Organizing the training department, Training manager and his job, On and off the job training techniques, Career planning and development, Performance appraisal.

UNIT-IV:

Understanding Human Behavior: Leadership styles, Personality – Johari Window – Transactional Analysis. Perception: Perceptual process, Development of Attitudes and Values, Understanding Group Dynamics, Team Effectiveness, Strategies to deal with conflicts and stress.

Contemporary Strategies: Total Quality Management (TQM), Six sigma, People capability maturity model (PCMM) levels, Performance management, Business process outsourcing (BPO), Business process re-engineering, Bench marking and balanced score card.

TEXT BOOKS:

1 Organizational Structures and Personnel Management, P.Subbarao HPH, 2009.
2 Personnel Management, Mamoria & Gankar, HPH, 2009.

REFERENCE BOOKS:

1 Organizational Behavior, Robbins: Pearson, 2008.
2 Industrial Business Management, Martand T Telsang, S.Chand.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 2nd Semester

L	T	P	C
0	0	3	2

16MC2206 C++ PROGRAMMING LANGUAGE LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Apply Abstraction to create models based on the real world.
2 Understand several techniques from previously established paradigms, including modularity, encapsulation and Polymorphism.
3 Apply greater flexibility and maintainability in programming.
4 Improve the knowledge on Objects and class.

List of Experiments:

1: Programs on Tokens.
2: Programs on Dynamic Initialization of variables.
3: Programs on control statements (if-else, Nested if-else, jump, goto, break, continue, while, do-while, for, switch-case).
4: Programs on Memory management operators.
5: Programs to implement on parameter passing techniques.
6: Programs using inline functions
7: Programs using function overloading.
8: Programs to implement Access specifiers.
9: Programs on Friend functions.
10: Programs on Copy Constructor.
11: Programs on Constructors with default arguments.
12: Programs on types of inheritance.

REFERENCE BOOKS:

1 C++ How to Program by H M Deitel and P J Deitel.
2 Object Oriented Programming in Turbo C++ by Robert Lafore , Press.
3 Programming with C++ by D Ravichandran
4 Object oriented Programming with C++ by E Balagurusamy.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 2nd Semester

L	T	P	C
0	0	3	2

16MC2207 DATA STRUCTURES LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Develop programs using recursive functions.
2 Implement stacks and queues using arrays
3 Develop Programs for searching and sorting algorithms.
4 Develop programs using concepts of trees.

List of Experiments:

1. Write C programs to implement the stack using arrays.
2. Write C programs to implement the Queue using arrays
3. Write C programs to implement the following Stack applications
   i) Infix to post fix ii) Evaluations of postfix expression.
4. Write C program to implement the following types of queues
   i) Priority Queue ii) Circular Queue.
5. Write C programs to implement the Singly linked list
6. Write C programs to implement the doubly linked list.
7. Write C programs to implement the following search algorithms:
   i) Linear Search ii) Binary Search iii) Fibonacci Search.
8. Write C programs to implement the sorting algorithms
9. Write a C program to implement binary tree using arrays and to perform binary tree traversals.
   i) inorder ii) preorder iii) postorder
10. Write a C program to balance a given tree.

TEXT BOOKS:

1 Ananda Rao Akepogu, Radhika Raju Palagiri, Data Structures and Algorithms Using C++, Pearson, 2011.
2 Mark Allen Weiss, Data Structures and Algorithm Analysis in C++, Third Edition,Pearson Education

REFERENCE BOOKS:

1 Langsam,M. J. Augenstein, A. M. Tanenbaum, Data structures using C and C++, 2nd Edition, PHI Education, 2008.
2 Sartaj Sahni, Ellis Horowitz, Fundamentals of at a Structure in C, 2nd Edition, Orientblackswan, 2010.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 2nd Semester

L	T	P	C
0	0	3	2

16MC2208 CORPORATE SOFT SKILLS LAB

COURSE OUTCOMES:

At the end of the course Student are able to

1 Develop formal communication skills in a work place.
2 Create them acquire team skill by working in group activities.
3 Equip them with suitable language and speech patterns in a workplace.
4 Enhance the ability of critical & lateral thinking while addressing the issues at any situation.
5 Present themselves confidently in job interviews.

List of Activities:

1: Phonetics, Introduction to Vowel Sounds & Consonants.
2: Introduction to Stress and Intonation.
3: Situational Dialogues.
4: Group Discussions.
5: Debate.
6: Just A Minute.
7: Resume or Curriculum Vitae and Covering Letter.
8: Interview Skills.

REFERENCE BOOKS:

1 "Soft Skills" – Know yourself & know the world by Dr. K. Alex.
2 Technical Writing and professional communication, Huckin and Olsen Tata McGraw-Hill 2009.
3 Speaking about Science, A Manual for Creating Clear Presentations by Scott Morgan and Barrett Whitener, Cambridge University press, 2006.
4 Technical Communication by Meenakshi Raman &Sangeeta Sharma, Oxford University Press 2009.
5 Resume's and Interviews by M. Ashraf Rizvi, Tata McGraw-Hill, 2008.
6 Form Campus to corporate by KK Ramachandran and KK Karthick, Macmillan Publishers India Ltd, 2010.
7 English Language Communication: A Reader cum Lab Manual Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, Anuradha Publications, Chennai 2008.
8 Managing Soft Skills by K R Lakshminarayan and T. Muruguvel, Sci-Tech Publication, 2010.
9 Business Communication by John X Wang, CRC Press, Special Indian Edition, 2008.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 3rd Semester

L	T	P	C
3	1	0	3

16MC1301 DATABASE MANAGEMENT SYSTEMS

COURSE OUTCOMES:

At the end of the course students will be able to

1 Identify and define the data models needed to design a database.
2 Create conceptual and logical database design for large enterprises.
3 Apply Integrity constrains over the relations.
4 Understand normalization process on existing database for eliminating redundancy.
5 Apply the recovery techniques for managing the database effectively to avoid the data lose.

UNIT-I :

Data base System Applications, File Systems vs. DBMS, View of Data, Data Abstraction, Instances and Schemas, Data Models, Database Languages, Data base Architecture.

Structured Query Language (SQL): The Form of a Basic SQL Query, UNION, INTERSECT and EXCEPT, Nested Queries, Aggregate Operators, Null Values, Logical Connectivity's-AND, OR and NOT, impact on SQL Constructs, outer joins, Disallowing NULL Values, Complex Integrity Constraints in SQL, Triggers and Active Data Bases.

UNIT-II:

The Relational Model: Introduction to the Relational Model, Integrity Constraints over Relations, Enforcing Integrity Constraints, Querying Relational Data. Logical Database Design: ER Model to Relational Model, Views.

The Entity Relationship Model: Database Design and ER diagrams, Entities, Attributes, and Entity sets, Relationships and Relationships Sets, Additional Features of the ER Model, Conceptual Design with the ER Model, Conceptual Design for Large Enterprises.

UNIT-III:

Schema refinement and Normal forms: Schema refinement, Problems Caused by redundancy, Decompositions, Problem related to decomposition, Functional Dependencies, Reasoning about FDS, Normal Forms, Properties of Decomposition, Normalization, Schema Refinement in Database Design, Other kinds of Dependencies.

Storage and indexing: The Memory Hierarchy, RAID, Disk Space Management, Buffer Management, Files of Records, Page Formats, Record formats. Index Data Structures, Hash Based indexing, Tree based Indexing, B+ Trees.

UNIT-IV:

Transactions: Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of isolation,

Testing for serializability.

Concurrency control: Lock Based Protocols, Timestamp Based Protocols- Validation Based Protocols, and Multiple Granularity.

Recovery System: Recovery and Atomicity, Log – Based Recovery, Recovery with Concurrent Transactions, Buffer Management, Failure with loss of Nonvolatile storage, Advance Recovery systems- Remote Backup systems.

TEXT BOOKS:

1 Raghurama Krishnan, Johannes Gehrke, Data base Management Systems, III Edition, TATA McGrawHill.
2 Silberschatz, Korth, Sudarshan Data base System Concepts, V Edition, McGraw hill.

REFERENCE BOOKS:

1 Ramez Elmasri, Shamkant B.Navrate Fundamentals of Database Systems, 5th Edition Pearson.
2 Peter Rob, Carlos Coronel, A. Anand Rao, Database Management Systems, First Edition, CENGAGE Learning.
3 Introduction to Database Systems, C.J. Date Pearson Education.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 3rd Semester

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16MC1302 JAVA PROGRAMMING

COURSE OUTCOMES:

At the end of the course students are able to

1 Solve problems using object oriented approach and implement them using Java.
2 Develop programs with multitasking ability.
3 Understand the Thread life cycle and ability to write Multithreading programs.
4 Use Exception Handling Mechanisms to write efficient java programs.
5 Understand the Networking concepts in java.
6 Create user friendly interface using Applets, Event Handlers and Swings.

UNIT-I :

Introduction to Java: The key attributes of Object Oriented Programming, Simple program, The Java keywords, Identifiers, Data types and operators, Program Control Statements, Arrays, Strings, and String Handling.

Classes And Objects: concepts of classes, Objects, Constructors, Methods, Access control, this keyword, Garbage collection, Overloading methods and constructors, Parameter passing, Recursion, String Handling.

UNIT-II:

Inheritance: Base class Object, forms of Inheritance, benefits of inheritance, Member access rules, using super, Creating Multi-Level Hierarchy, method overriding, abstract classes, using final with inheritance.

Packages and Interfaces: Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, Interfaces- Defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces,

Exception Handling: Concepts of exception handling, exception hierarchy, Usage of try, catch, throw, throws and finally, built in exceptions, Creating own exception sub classes.

UNIT-III:

Multithreading: Java Thread Model, Thread Life Cycle, Creating threads, threads priority, synchronizing threads, inter thread communication.

Applets: Concepts of Applets, Differences between applets and applications, Life cycle of an applet, Types of applets, Creating applets, Passing parameters to applets, Graphics class.

UNIT-IV:

Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, Handling mouse and keyboard events, Adapter classes, Inner classes,

Introduction to Swings: The origin and design philosophy of swing, Components and Containers, Layout managers, Event handling, Using a push button, JTextField, JLabel and ImageIcon.

TEXT BOOKS:

1 Java: the complete reference, 7th editon, Herbert Schildt, TMH.
2 Advanced Programming in Java2, K.Somasundaram, Jaico Publishing House.

REFERENCE BOOKS:

1 Java: the complete reference, 7th editon, Herbert Schildt, TMH.
2 Java for Programmers, P.J.Deitel and H.M.Deitel, Pearson education / Java: How to Program P.J.Deitel and H.M.Deitel, 8th edition, PHI.
3 Core Java, Volume 1-Fundamentals, eighth edition, Cay S.Horstmann and Gary Cornell, Pearson education.
4 Java Programming, D.S.Malik, Cengage Learning.
5 Object Oriented Programming with Java, B.Eswara Reddy, T.V.Suresh Kumar, P.Raghavan, Pearson-Sanguine.
6 An introduction to Java programming and object oriented application development, R.A. Johnson- Cengage Learning.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 3rd Semester

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16MC1303 OPERATING SYSTEMS

COURSE OUTCOMES:

At the end of the course Students are able to

1 Understand the services of operating system.
2 Examine the efficiency of Scheduling algorithms.
3 Understand about Inter process communication and their methods.
4 Analyze about Deadlock and apply various methods to prevent Deadlock.
5 Understand various Memory Management concepts and Virtual memory.
6 Examine Structure of file system and Way of Accessing the file system.

UNIT-I :

Operating System Overview: Introduction to Operating System, Operating System Services, Operating system Structures, Distributed systems, Special purpose systems, System calls, Types of System Calls.

Process Management: Process Concepts, Process Scheduling Criteria, Scheduling algorithms and their evaluation, Inter process communication, Multi threaded programming-overview, multithreading models.

UNIT-II:

Process Synchronization: Critical section problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classic problems of Synchronization, Monitors.

Deadlocks: System model, Deadlock Characterization, Deadlock Prevention, Deadlock Detection and Deadlock Avoidance, Recovery from deadlock.

UNIT-III:

Memory Management: Memory management strategies-Swapping, Contiguous memory allocation, Paging, Structure of the Page Table, Segmentation. Virtual Memory Management - Demand paging, Page Replacement algorithms.

File System: File Concept, Access methods, Directory Structure, File System mounting, File sharing and Protection. Implementing file Systems- Allocation methods, Free space management.

Secondary storage structure: Mass-Storage structure**,** Disk structure, Disk attachment, Disk scheduling, Swap – space management.

UNIT-IV:

I/O Systems: I/O Hardware, Application I/O interface, Kernel I/O sub systems, Transforming I/O requests to Hardware operations.

Protection: Protection, Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix, Access Control, Revocation of Access Rights, Capability – Based Systems, Language – Based Protection.

TEXT BOOKS:

1 Abraham Silberschatz, Peter B. Galvin, Greg Gagne, Operating System Principles, Eighth Edition, John Wiley.
2 Andrew S Tanenbaum, Modern Operating Systems, Second Edition, PHI.

REFERENCE BOOKS:

1 William Stallings, Operating Systems: Internals and Design Principles,Sixth Edition– 2009, Pearson Education.
2 B.L.Stuart, Cengage learning, Principles of Operating Systems, India Edition.
3 A.S.Godbole, Operating Systems, Second Edition, TMH.
4 R.Elmasri, A.G.Carrick and D.Levine, Operating Systems, Mc Graw Hill.
5 Sibsankar Haldar, Alex A, Aravind, Operating Systems, Pearson Education India.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 3rd Semester

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16MC1304 SOFTWARE ENGINEERING

COURSE OUTCOMES:

At the end of the course students will be able to

1 Understand ethics and professional issues important for software engineering.
2 Examine how CMMI Levels will be assigned for organizations.
3 Apply various processes used for developing the software.
4 Examine various models will be used for representing the requirements.
5 Learn about Design and Different Architectural styles.
6 Evaluate Software by different testing Techniques.
7 Analyses various types of risks in software.

UNIT-I :

Introduction To Software Engineering: The Evolving Role of Software, Changing Nature of Software, Legacy Software, Software Myths, Software Engineering - A Layered Technology, A Process Framework, The Capability Maturity Model Integration (CMMI), Process Patterns, Process Assessment.

Process Models: The Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, the Unified Process.

UNIT-II:

Software Requirements: Functional and non-functional requirements, User Requirements, System requirements, The software requirements document.

Requirements Engineering Processes: Requirements elicitation and analysis, Requirements validation, Requirements management. System models- Context Models, Behavioral models, Data models, Object models, Structured methods.

UNIT-III:

Design Engineering: Design Process And Design Quality, Design Concepts, Design Model, Pattern Based Software Design, Software Architecture, Architectural Styles and Patterns, Assessing Alternative Architectural Designs.

Modeling Component-Level Design: Designing Class-Based Components, Designing Traditional Components. User Interface Design- The Golden Rules, User Interface Analysis and Design, Design Evaluation. Testing Strategies- A Strategic Approach to Software Testing, Test Strategies for Conventional Software, Black-Box and White-Box Testing, The Art Of Debugging.

UNIT-IV:

Product Metrics: Software Quality, A Frame work for Product metrics, Metrics for

Requirements Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Risk management: Reactive vs Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

TEXT BOOKS:

1 Software Engineering: A practitioner‘s Approach, Roger S. Pressman, Seventh Edition. McGraw-Hill International Edition, 2010
2 Software Engineering, Ian Sommerville, Eighth Edition, Pearson Education, 2009.

REFERENCE BOOKS:

1 K.K. Agarwal & Yogesh Singh, Software Engineering- New Age International Publishers.
2 James F. Peters, Witold Pedrycz, John Wiely, Software Engineering, an Engineering approach.
3 Shely Cashman Rosenblatt, Systems Analysis and Design- Thomson Publications.
4 Waman S Jawadekar, Software Engineering principles and practice- The McGraw-Hill Companies.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 3rd Semester

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16MC1305 DATA COMMUNICATION AND NETWORKS

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand basic computer network technology, Data Communications System and its components.
2 Analyze the different types of network topologies and protocols.
3 Study the layers of the OSI model, TCP/IP and the function(s) of each layer.
4 Study the different types of network devices and their functions within a network.
5 Understand and building the skills of sub netting and routing mechanisms.
6 Learn the basic protocols of computer networks, and how they can be used to assist in network design and implementation.

UNIT-I :

Introduction to Networks: internet, protocol and standard, the OSI model, layer in OSI model, TCP/IP suite, ATM, Analog and digital signals.
Physical Layer: digital transmission, multiplexing, transmission media, circuit switched networks, Datagram networks, virtual circuit networks, switch and Telephone network.

UNIT-II:

Data link layer: Introduction Block coding, cyclic codes,, checksum, framing, flow and error control, Noiseless channels, noisy channels, HDLC , point to point protocols
Medium Access sub layer: Random access, controlled access, channelization, Ethernet, wireless LANs.

UNIT-III:

Connecting LANs, backbone networks and virtual LANs, Wireless WANs, SONET, frame relay.
Network Layer: Logical addressing, internetworking, tunneling, address mapping, ICMP, IGMP, Forwarding, uni-cast routing protocols, multicast routing protocols.

UNIT-IV:

Transport Layer: Process to process delivery, UDP and TCP protocols, SCTP, data traffic, congestion, Congestion control, Qos.
Application Layer: Domain name space, electronic mail, FTP, WWW, HTTP, SNMP.

TEXT BOOKS:

1 Behrouz A. Forouzan, Data Communication and Networking, Fourth Edition, TMH.

2 Andrew S Tanenbaum, Computer Network, 4th Edition, Person Education.

REFERENCE BOOKS:

1 S.Keshav, Engineering Approach to Computer Network, 2nd Edition, Person Education.
2 W.A.Shay,Understanding communication and Networks,3rd Edition, Cengage Learning.
3 NNader F. Mir ,Computer and Communication Networks, Pearson Edition
4 JamesF.Kurose, K.W.Ross Computer Networking: A Top-Down Approach Featuring the Internet 3rd Edition,Person Edition.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 3rd Semester

L	T	P	C
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16MC2306 DATABASE MANAGEMENT SYSTEMS LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand, analyze, and apply common SQL Statements including DDL, DML and DCL statements to perform different operations.
2 Apply Integrity constrains over the tables.
3 Understand, analyze, and apply PL/SQL blocks using Cursors and Triggers.

List of Experiments:

1: Practice DDL Commands: Creation, altering and dropping of tables with out and with Integrity Constraints.
2: Practice DML Commands: Inserting, updating and deleting rows of a table and enforce Integrity Constraints.
3: Queries using DISTINCT, AND, OR, NOT, BETWEEN, LIKE, IS NULL, ORDER BY. Example:- Select the roll number and name of the student who secured fourth rank in the class.
4: Queries (along with sub Queries) using ANY, ALL, IN, NOT IN, EXISTS, NOTEXISTS, UNION, INTERSET, MINUS.
5: Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
6: Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add months, last_day, months between, least, greatest, trunc, round, to_char, to_date).
7: i)Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)
ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
8: Program development using WHILE LOOPS, FOR LOOPS, nested loops.
9: Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
10: Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
11: Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12: Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

TEXT BOOKS:

1 Peter Rob, Carlos Coronel, A. AnandRao, Database Management Systems, First Edition, CENGAGE Learning.
2 Raghurama Krishnan, Johannes Gehrke, Data base Management Systems, III Edition, TATA McGraw-Hill.

REFERENCE BOOKS:

1 Dr. P.S.Deshpande, SQL & PL/SQL for Oracle 10g, Black Book, Dream Tech.
2 Rick F.VanderLans, Introduction to SQL, Pearson Education.
3 B.Rosenzweig and E.Silvestrova,Oracle PL/SQL, Pearson Education.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 3rd Semester

L	T	P	C
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16MC2307 JAVA PROGRAMMING LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand how object-oriented concepts are incorporated into the Java programming language.
2 Develop problem-solving and programming skills using OOP concept.
3 Design efficient interactive programs in Java using Applets, Event Handlers and Swings.
4 Solve real-world problems through software development in java.

List of Experiments:

1: Write a Java program:

a. To prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.
b. To generate Fibonacci sequence.
c. To print the given number is Armstrong or not.
d. To find simple Interest.

2: Write a Java program:

a. To Checks whether a given string is a palindrome or not. Ex: MALAYALAM is a palindrome.
b. To Sorting a given list of names in ascending order.
c. To make frequency count of words in a given text.

3: Write a Java program:

a. That prompts the user for an integer and then prints out all prime numbers up to that integer.
b. To find the product of matrices.
c. that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)

4: Write a Java program:

a. That reads a file name from the user, and then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
b. That reads a file and displays the file on the screen, with a line number before each line.
c. That displays the number of characters, lines and words in a text file.

5: Write a Java program:

a. To Implements stack ADT.
b. To Converts infix expression into Postfix form

c. Evaluates the postfix expression

6: Write a Java program:

a. To develop an applet that displays a simple message.
b. To develop an applet that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named "Compute" is clicked.

7: Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -,*, % operations. Add a text field to display the result.

8: Write a Java program for handling mouse events.

9: Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

10: Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.

11: Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. For ex: The data sent from the client is the radius of a circle, and the result produced by the server is the area of the circle. (Use java.net)

12: Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts.

TEXT BOOKS:

1 Herbert Schildt, The Complete Reference Java J2SE 7th Edition, TMH Publishing Company Ltd, NewDelhi.
2 H.M.Dietel and P.J.Dietel, Java How to Program, Sixth Edition, Pearson Education/PHI

REFERENCE BOOKS:

1 Cay.S.Horstmann and Gary Cornell, Core Java 2, Vol 1, Fundamentals, Seventh Edition, Pearson Education.
2 Cay.S.Horstmann and Gary Cornell, Core Java 2, Vol 2, Advanced Features, Seventh Edition, Pearson Education.
3 Cay Horstmann, John Wiley and Sons, Big Java 2nd Edition.
4 E.Balagurusamy, Programming with JAVA; Primer Fourth edition, TMH.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 3rd Semester

L	T	P	C
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16MC2308 OPERATING SYSTEMS LAB (LINUX)

COURSE OUTCOMES:

At the end of the course students are able to

1 Create the programs on process scheduling Algorithms.
2 Implement the programs on Memory Management Techniques.
3 Create the programs on Deal Locks methods.
4 Implement the programs on Disk scheduling Algorithms.
5 Create the programs on Virtual Memory and paging methods.

List of Experiments:

1: Write a C program to Implement
   a. FCFS (First Come First Served) CPU scheduling algorithm.
   b. SJF (Shortest Job First) CPU scheduling algorithm.

2: Write a C program to Implement
   a. Priority CPU Scheduling algorithm
   b. Round Robin CPU Scheduling algorithm

3: Write a C program to Implement MVT (Multiprogramming Variable Task).

4: Write a C program to Implement MFT (Multiprogramming Fixed Task).

5: Write a C program to implement the Banker's Algorithm for Deadlock Avoidance.

6: Write a C program to Implement Banker's Algorithm for Deadlock Prevention.

7: Write a C program to Implement Deadlock Detection.

8: Write a C Program for File Allocation Methods.
   a).Sequential File Allocation b).Indexed File Allocation c).Linked File Allocation.

9: Write a C Program for Page Replacement Policies.
   a). FIFO (First In First Out) Page Replacement
   b).LRU (Least Recent Used) Page Replacement
   c).Optimal Page Replacement (LFU)

10: Write a C program to Implement Paging Memory Allocation Technique.

11: Write a C program to Implement Segmentation Memory Allocation Technique

12: Write a C program to Implement Shared Memory and IPC.

REFERENCE BOOKS:

1 Abraham Silberschatz, Peter B. Galvin, Greg Gagne, Operating System Principles, Eighth Edition, John Wiley.
2 Andrew S Tanenbaum, Modern Operating Systems, Second Edition, PHI.
3 Stallings, Operating Systems: Internals and Design Principles,Sixth Edition–2009, Pearson Education.
4 B.L.Stuart, Cengage learning, Principles of Operating Systems, India Edition.
R.Elmasri, A,G.Carrick and D.Levine, Operating Systems, Mc Graw Hill.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
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16MC1401 OBJECT ORIENTED ANALYSIS AND DESIGN

COURSE OUTCOMES:

At the end of the course students are able to

1. Understand basic Object Oriented analysis and design and its difference from structured design.
2. Understand the Unified Modeling Language (UML) diagrams.
3. Apply the UML as a modeling and communication tool.
4. Create a static conceptual model and behavioral model of your system.
5. Design and build a software system using the Unified Process approach.

UNIT-I :

Introduction to UML: Object, Object Orientation, Development, Modeling, Object Modeling, Importance of Modeling, Principles of Modeling, Conceptual model, Model Driven Architecture with UML, Software Development Life Cycle of UML, UML Architecture.

UNIT-II:

Basic Structural Modeling: Classes, Relationships, Diagrams.
Advanced structural Modeling: Advanced Classes, Advanced relations, Interfaces, Types and Roles.
Class & Object diagrams: Terms, Concepts, Common Modeling techniques for Class & Object diagrams.

UNIT-III:

Basic Behavioral Modeling–I: Interactions, Interaction diagrams, Common Modeling techniques
Basic Behavioral Modeling–II: Use Cases, Use Case Diagrams, and Activity Diagrams, Common Modeling techniques.

UNIT-IV:

Advanced Behavioral Modeling: Events and Signals, State machines, State chart diagrams.
Architectural Modeling: Component, Development, Component Diagrams and Deployment Diagrams. Patterns and Frame works, Artifact Diagrams. Case Study: The Unified Library application.

TEXT BOOKS:

1 Grady Booch, James Rambaugh, Ivar Jacobson: The Unified Modeling Language User Guide, Pearson Edition.
2 Object Oriented Analysis and Design Bennett, Simon McGraw Hill.

REFERENCE BOOKS:

1 Craig Larman, "Applying UML and Patterns-An Introduction to Object orientated Analysis and Design and Iterative Development", 3rdEdition Pearson Edition.
2 Hans Eriksson, Magnus, Penker, Brain Lyons, David Fado: UML 2 Toolkit, WILEY Dreamtech India Pvt.Ltd.
3 Meilir Page-Jones: Fundamentals of Object Oriented Design in UML - Pearson education.
4 Atul Kahate: Object Oriented and Design, the McGraw-Hill Company.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
3	1	0	3

16MC1402 ADVANCED JAVA PROGRAMMING

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand the Servlets Concepts.
2 Integrate java and server side scripting languages to develop web applications.
3 Develop and deploy real time web applications in web servers and in the cloud.
4 Understand the JSP Concepts.
5 Develop simple database driven web applications using a server-side scripting language.

UNIT-I :

Servlets: The Lifecycle of a Servlet, Using Tomcat for Servlet Development, A Sample Servlet, The Servlet API, The javax.servlet Package, Reading Servlet Parameters. The javax.servelet. Http Package, Handling Http Request & Responses, Using Cookies-Session Tracking.

Introduction to JSP: The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC.

Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat.

UNIT-II:

JSP Application Development: Generating Dynamic Content, Creating a JSP Page, Installing a JSP Page, Running a JSP Page, Using JSP Directive Elements, Using Template Text, Using JSP Action Elements.

Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, and Java Beans API.

Using Java Beans Components in JSP Pages: Declaring a Bean in a JSP Page, Reading Bean Properties, and Setting Bean Properties.

UNIT-III:

Using Custom Tag Libraries and the JSP Standard Tag Library: What is a Custom Tag Library, Installing a Custom Tag Library, Declaring a Custom Tag Library.

Processing Input and Output: Reading Request Parameter Values, Validating User Input, Formatting HTML Output.

Error Handling and Debugging: Dealing with Syntax Errors, Debugging a JSP application, dealing with Runtime Errors.

UNIT-IV:

Sharing Data between JSP pages, Requests, and Users: Passing Control and Date between Pages, Sharing Session and Application Data, Memory Usage Considerations.
Accessing A Database: Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, Deploying JAVA Beans in a JSP Page.

TEXT BOOKS:

1 Hans Bergsten, Java Server Pages, SPD O'Reilly.
2 Herbert Scheldt, The Complete Reference Java J2SE Fifth Edition, TMH.

REFERENCE BOOKS:

1 Marty Hall and Larry Brown Pearson, Core Servlets and Java Server Pages Volume 1: Core Technologies.
2 Java Server Pages, Pekowsky, Pearson.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
3	1	0	3

16MC1403 DATA WAREHOUSING AND DATA MINING

COURSE OUTCOMES:

At the end of the course students are able to

1 Apply relevant preprocessing techniques on different data sets for mining.
2 Implement Association rule mining concept and generate association rules.
3 Apply classification/clustering techniques on different types of data and analyze patterns.
4 Suggest appropriate data mining techniques to mine different types of data.

UNIT-I :

Introduction: Fundamentals of data mining, Data Mining Functionalities, Major issues in Data Mining.

Data Preprocessing: Needs Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Warehouse and OLAP Technology for Data Mining Data Warehouse, Multi -Dimensional Data Model, Data Warehouse Architecture.

UNIT-II:

Data Mining Primitives and System Architectures: Data Mining Primitives, Architectures of Data Mining Systems.

Concepts Description: Characterization and Comparison: Data Generalization and Summarization Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating between Different Classes.

UNIT-III:

Mining Association Rules in Large Databases: Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases.

Classification: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification.

UNIT-IV:

Cluster Analysis Introduction: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, hierarchical methods, outlier analysis

Mining Complex Types of Data- Mining Multimedia Databases, Mining Text Databases, Mining the World Wide Web.

TEXT BOOKS:

1 Data Mining – Concepts and Techniques - Jiawei Han & Micheline Kamber Harcourt, India.
2 Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Pearson Education.

REFERENCE BOOKS:

1 Data Mining Techniques – Arun K Pujari, University Press
2 Data Mining Introductory and advanced topics –Margaret H Dunham, Pearson Education
3 Data Warehousing in the Real World – Sam Anahory & Dennis Murray. Pearson Edn
4 Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley Student Edition

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
3	0	0	3

16MC1404 OPTIMIZATION TECHNIQUES

COURSE OUTCOMES:

At the end of the course students are able to

1 Know the concepts of Operations Research.
2 Get the various methods of simplex methods to industrial applications.
3 Handle the practical situations of transport, assignment, and sequencing problems.
4 Gain the decision making analysis using game theory.
5 Construct the network diagrams.
6 Solve the problems related to CPM and PERT using the network construction.

UNIT-I :

Linear programming problems: Linear programming problems **-** Formulation - Graphical Solution LP problems - Simplex method – Big – M and Artificial variables methods.

UNIT-II:

Transportation & Assignment Problems: Definition and application of transportation problem – Initial Basic Feasible solutions by North – West corner, least cost, and Vogel's approximation methods - Solution of the transportation problem – Optimality test.
Introduction to Assignment Problems - Hungarian Algorithm for balanced and unbalanced problems.

UNIT-III:

Sequencing problems & Game Theory: Introduction to Sequencing - *n*' jobs on two and three machines, two jobs on 'n' machines.
Two - person zero - sum game - Pure strategy - Games with saddle point - mixed strategies – 2 X 2 games without saddle point - Arithmetic Methods for 2 x 2 games - Rules of Dominance – Algebraic method.

UNIT-IV:

PERT & CPM: Introduction to networks - Network diagram construction – PERT-Calculations of estimated time - standard deviation and probability - CPM - Identification of critical path.

TEXT BOOKS:

1 S.D. Sharma, "Operations Research" - S. Chand (For 1, 2, and 3 units).
2 KantiSwarup, P.K. Gupta, and Man Mohan - "Operations Research" – (For 4th Unit) Sultan Chand & Sons – 8th thoroughly revised edition.

REFERENCE BOOKS:

1 Premkumar Gupta, Hira, "Operations Research", - S.Chand, 2008.
2 Hamdy, A.Taha, "Operations Research" - An Introduction, - Person Education.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

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16MC1405 SOFTWARE TESTING

COURSE OUTCOMES:

At the end of the course students are able to

1. Study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
2. Understand various software testing issues and solutions in software unit test, integration, regression, and system testing.
3. Learn how to plan a test project, design test cases and data, conduct testing operations, manage software problems and defects, and generate a testing report.
4. Study the advanced software testing topics, such as object-oriented software testing methods, and component-based software testing issues, challenges, and solutions.
5. Learn software testing experience by applying software testing knowledge and methods to practice-oriented software testing projects.

UNIT-I :

Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.

Flow graphs and Path testing : Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, Applications.

UNIT-II:

Transaction Flow Testing: Transaction flows, transaction flow testing techniques. Dataflow testing:- Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

Domain Testing: Domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

UNIT-III:

Paths, Path products and Regular expressions: Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

Logic Based Testing: Overview, decision tables, path expressions, KV charts, Specifications.

UNIT-IV:

State, State Graphs and Transition testing: State graphs, Good & bad state graphs, State testing, Testability tips.

Graph Matrices and Application: Motivational overview, Matrix of graph, Relations, Power of a matrix, Node reduction algorithm, Building tools.

TEXT BOOKS:

1 Software testing techniques - Baris Beizer, Dreamtech, second edition.
2 Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.

REFERENCE BOOKS:

1 The craft of software testing - Brian Marick, Pearson Education.
2 Software Testing Techniques – SPD(Oreille)
3 Software Testing in the Real World – Edward Kit, Pearson.
4 Effective methods of Software Testing, Perry, John Wiley.
5 Art of Software Testing – Meyers, John Wiley.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
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16MC1406 DESIGN PATTERNS

COURSE OUTCOMES:

At the end of the course students are able to

1 Classify and document design patterns.
2 Understand patterns to manage algorithms and assign responsibilities to objects.
3 Apply patterns to solve design problems.
4 Create new design patterns.

UNIT-I :

Introduction: What Is a Design Pattern? Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT-II:

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.
Structural Pattern Part-I: Adapter, Bridge, and Composite.

UNIT-III:

Structural Pattern Part-II: Decorator, Façade, Flyweight, Proxy.
Behavioral Patterns Part-I: Chain of Responsibility, Command, Interpreter, Iterator.

UNIT-IV:

Behavioral Patterns Part-II: Mediator, Memento, Observer, State, Strategy, Template Method, Visitor, Discussion of Behavioral Patterns.
What to Expect from Design Patterns, A Brief History, The Pattern Community, An Invitation, A Parting Thought.

TEXT BOOKS:

1 Design Patterns By Erich Gamma, Pearson Education

REFERENCE BOOKS:

1 Pattern's in JAVA Vol-I by Mark Grand, Wiley Dream Tech.
2 JAVA Enterprise Design Patterns Vol-III by Mark Grand, Wiley Dream Tech.
3 Head First Design Patterns by Eric Freeman-Oreilly-spd.
4 Design Patterns Explained by Alan Shalloway, Pearson Education

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
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16MC1407 IMAGE PROCESSING

COURSE OUTCOMES:

At the end of the course students are able to

1. Appreciate image manipulations and different digital image processing techniques in various fields.
2. Perform basic operations like – Enhancement, Image transform and restoration techniques on image.
3. Make use of image segmentation, compression for various applications.
4. Analyze pseudo and full color image processing techniques.
5. Apply the various image transforms used in image processing.
6. Apply MATLAB to implement the image processing techniques.

UNIT-I :

Digital Image Fundamentals: Fundamental steps in Digital image processing, Digital image representation, Elements of visual perception, Light and electromagnetic spectrum, Image sensing and acquisition, Image sampling and quantization, Basic relationships between pixels. An introduction to mathematical tools in digital image processing

Color Image Processing: Color fundamentals, color models, Pseudo color Image Processing, Full Color Image Processing, Color transformations.

UNIT-II:

Image transforms: 2D DFT and its properties, Discrete cosine transform, STFT, Introduction to Wavelet.

Image Enhancement: Enhancement in spatial domain, Intensity transformations, Histogram Processing, Smoothing and sharpening. Image Enhancement in Frequency Domain Filters, Smoothing Frequency Domain Filters and Sharpening Frequency Domain Filters.

UNIT-III:

Color image enhancement: Image smoothing, Sharpening Spatial domain and Frequency domain

Image Restoration: A Model of the Image Degradation/Restoration Process, Linear Position-Invariant Degradations, Inverse filtering, Minimum Mean Square Error (Wiener) Filter, Constrained Least squares filtering.

UNIT-IV:

Image segmentation: Fundamentals, point, Line and Edge detection, , Thresholding, Region based Segmentation.

Image Compression: Fundamentals, Image Compression Models, Elements of Information

Theory,Error Free Compression, Lossy Compression, Image compression using DCT and DWT, Introduction to Digital Image water marking.

TEXT BOOKS:

1 Rafel C.Gonzalez and Richard E.Woods, "Digital Image Processing", Pearson Education,3rd edition 2011

REFERENCE BOOKS:

1 Anil K. Jain, "Fundamentals of Digital Image Processing", 2003, Pearson Education.
2 S.Jayaraman S.Esakirajan T.Veerakaumar" Digital Image Processing" Mc Graw Hill publishres, 2009
3 S.Sridhar," Digital Image Processing" oxford publishers, 2011
4 Chanda & Majumdar, "Digital Image Processing and Analysis" 2003, PHI.
5 M.Sonka,V. Hlavac, R. Boyle, "Image Processing, Analysis and Machine Vision", Vikas Publishing House

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
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16MC1408 NEURAL NETWORKS AND FUZZY LOGIC

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand the characteristics artificial neural networks & different ANN models.
2 Acquire the knowledge about feed forward & feedback neural networks.
3 Know the unsupervised learning algorithms.
4 Understand the concept of fuzziness involved in various systems.
5 Acquire the knowledge about fuzzy set theory.

UNIT-I :

Introduction to Neural Networks: Introduction, Human Brain, Model of Artificial Neuron, Neural network architecture, Characteristics of neural network, Types of learning methods McCulloch-Pitts Model, Hodgkin-Huxley Neuron Model, Integrate-and-Fire Neuron Model, Historical Developments, Potential Applications of ANN

UNIT-II:

Single-layer perception, Back propagation learning algorithm, Multi-layer perception, limitations of Multi-layer perception. Kohonen self –organizing networks, Kohonen training algorithm, Gross berg layer, Training the Grossberg layer

UNIT-III:

Hopfield Networks, Hope field for continuous model, Hope filed network algorithm, application of Hopfiled. Associate Memory, Bidirectional Associate memory (BAM), BAM Structure and Characteristics

UNIT-IV:

Fuzzy Logic: Basic concepts of Fuzzy logic, Fuzzy vs Crisp set, Linguistic variables, Membership functions, Operations of Fuzzy sets, Fuzzy if-then rules, Variables inference techniques.

Defuzzification techniques, Basic Fuzzy interference algorithm, Application of fuzzy logic, Fuzzy system design implementation.

TEXT BOOKS:

1 Neural Networks, Fuzzy logic, Genetic algorithms: synthesis and applications by Rajasekharan and Rai – PHI Publication.
2 Neural Networks – Simon Hakins , Pearson Education.

REFERENCE BOOKS:

1 "Artificial Neural Networks", Yegna Narayanan, 8th Printing, PHI(2003).
2 "Neural Networks in Computer Intelligence," Limin Fu, McGraw Hill, 2003.
3 "Fuzzy Logic with Engineering Applications, Timothy J. Ross,"McGraw Hill,1995.
4 Neural Networks, Syedmahmood Rahmatullah-Sure publications.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
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16MC1409 NETWORK SECURITY AND CRYPTOGRAPHY

COURSE OUTCOMES:

At the end of the course students are able to

1. Analyze a given system with respect to security of the system.
2. Understanding of Authentication functions the manner in which Message Authentication Codes and Hash Functions works.
3. Examine the issues and structure of Authentication Service and Electronic Mail Security.
4. Understand conventional and public key cryptographic approaches used in encryption.
5. Identify various types of attacks and its effect over the networks.

UNIT-I :

Introduction to security attacks, Services and mechanism, Introduction to cryptography, A model for Network security, Symmetric cipher model, Classical encryption techniques-Substitution ciphers and transposition techniques, Cryptanalysis, Steganography.
Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, UDP hijacking, Conventional Encryption Principles, location of encryption devices.

UNIT-II:

Modern Block Ciphers: Block ciphers principles, Data encryption standard (DES), Strength of DES, Block cipher modes of operations, Triple DES, AES and IDEA.
Principles of public-key crypto systems, RSA algorithm, Key management, Diffie-Hellman Key exchange algorithm.

UNIT-III:

Message Authentication and Hash Function: Authentication requirements, Authentication functions, Message authentication code, Hash functions, MD5 message digest algorithm, Secure hash algorithm(SHA), HMAC, Digital Signatures.
Authentication Applications: Kerberos and X.509, Electronic mail security-pretty good privacy (PGP).

UNIT-IV:

IP Security: Architecture, Authentication header, Encapsulating security payloads, Combining security associations, Key management.
Web Security: Secure socket layer and transport layer security, Secure electronic transaction.
System Security: Intruders, Viruses and related threats, Firewall design principals, Trusted systems.

TEXT BOOKS:

1 William Stallings, "Cryptography and Network Security: Principals and Practice", Prentice Hall, New Jersy.
2 William Stallings, Network security essentials, Prentice Hall, New Jersy.

REFERENCE BOOKS:

1 Johannes A. Buchmann, "Introduction to Cryptography", Springer-Verlag.
2 Bruce Schiener, "Applied Cryptography".
3 Fundamentals of Network Security by Eric maiward (Dremtech press)

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
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16MC1410 QUALITATIVE AND QUANTITATIVE ANALYSIS

COURSE OUTCOMES:

At the end of the course students are able to

1 Improve the competitive sprit.
2 Key points that is useful for every competitive exam as well as placements.
3 Enhance their problem solving skill in their real life.
4 Think always in a short way.

UNIT-I :

Simple Arithmetic Number - H.C.F. & L.C.M. of Numbers – Decimal Fractions – Simplification –Square Root and Cube Root – Average – Problems on Numbers – Problems on Ages – Percentage –Profit & Loss – Ratio & Proportion-Partnership – Chain Rule – Time & Work – Pipes & Cisterns – Time& Distance – Problems on Trains – Boats & Streams – Allegation or Mixture – Simple Interest –Compound Interest– Calendar – Clocks –Races & Games of Skill – Number Series .

UNIT-II:

Reasoning (Verbal) Series Completion – Analogy – Coding–Decoding –Classification – Blood Relations – Puzzle test – Sequential output tracing - Direction Sense test –Logical Venn diagrams – Alphabet test – Alpha-Numeric Sequence puzzle – Number, Ranking and time sequence test – Mathematical operations – Logical sequence of words – Arithmetical reasoning– Insert the missing character – Data sufficiency – Eligibility test – Assertion and reason – Situation reaction test – Verification of Truth of the Statement –Cubes and dice.

UNIT-III:

Logical deductions and Reasoning

Syllogism – Statement-Arguments – Statement-Course of action-Statement-Assumptions – Deriving conclusion from passages – Theme detection – Cause and effect reasoning.

UNIT-IV:

Data Interpretation and Mensuration Tabulation – Pi –Chart – Bar Diagram – Line Graphs- Area Volume & Surface Areas –

TEXT BOOKS:

1 RS Agarwal , A textbook on Quantitative Aptitude
2 RS Agarwal, A textbook on verbal and reasoning.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

L	T	P	C
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16MC2411 ADVANCED JAVA PROGRAMMING LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand the Servlets Concepts.
2 Integrate java and server side scripting languages to develop web applications.
3 Develop and deploy real time web applications in web servers and in the cloud.
4 Understand the JSP Concepts.
5 Develop simple database driven web applications using a server-side scripting language.

List of Experiments:

1: Write a Simple Bean Program for displaying the rectangular box. Your Bean Program must possess 2 Properties namely height & width. If we change values of these 2 properties then size of box must be changed accordingly.

2: Write a Simple Bean Program for displaying either line or rectangle the selection should be made by user by using property rectangle that means if rectangle property is true then a rectangle must be drawn otherwise a line must be drawn.

3: Write a Simple Bean Program on Constrained Properties.

4: Write a Simple Bean Program for generating Traffic signal.

5: Install TOMCAT web server and APACHE.

a. While installation assign port number 4040 to TOMCAT and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.
b. Access the above developed static web pages for books web site, using there servers by putting the web pages by using the urls: http://localhost:4040/sree/books.html (for tomcat) http://localhost:8080/books.html (for Apache)

6: Write a Servlet Program using doGet&doPost Methods.

7: Write a Servlet Program to connect to the database and extract the data from the table and display in html tabular model.

8: **User Authentication:** Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively.

Write a Servlet for doing the following.

1. Create a Cookie and add these four user ids and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form and authenticate with the values available in the cookies. If he is a valid user you should welcome him by name else you should display "You are not an authenticated user ".

9: Install a database (Mysql or Oracle). Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form).

10: Write a Servlet program to connect to that database and extract data from the tables and display them Experiment with various SQL queries. Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page.
11: Write a JSP program to connect to that database and extract data from the tables and display them Experiment with various SQL queries. Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page.
11: Write a JSP which does the following job: Insert the details of the 3 or 4 users who register with the web site by using registration form. Authenticate the user when he submits the login form Using the user name and password from the database.
12: Create tables in the database which contain the details of items of each category. Modify your Catalogue page in such a way that you should connect to the database and extract data from the Tables and display them in the catalogue page using JDBC.

TEXT BOOKS:

1 Hans Bergsten, Java Server Pages, SPD O'Reilly.
2 Herbert Scheldt, The Complete Reference Java J2SE Fifth Edition, TMH.

REFERENCE BOOKS:

1 Marty Hall and Larry Brown, Core Servlets and Java Server Pages Volume 1: Core Technologies, Pearson.
2 Pekowsky, Java Server Pages, Pearson.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 4th Semester

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16MC2412 DATA MINING AND OOAD LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Classify the given patterns.
2 Find the frequent patterns from the given data sets.
3 Represent the project scenario in terms of UML diagrams.
4 Recognize the difference between various object relationships: inheritance, association, whole-part, and dependency relationships.
5 Show the role and function of each UML model in developing object oriented software.

List of Experiments:

1: Implement Apriori algorithm to generate frequent Item Sets using WEKA.
2: Implement the following clustering algorithms using WEKA.
a. K-means b. K-mediods
3: Classification algorithms using WEKA.
4: Perform data preprocessing using WEKA.
5: Perform Discritization of data using WEKA.
6: Perform data transformations using an ETL Tool.

Design the UML Diagrams for the following

7: ATM Application.
8: Online Railway Reservation System.
9: Bank Simulated Company Application.
10: Auction Application.
11: Point Of Sale Application.
12: E- seva Application.
13: Online Student Course Application.
14: Library System Application.

REFERENCE BOOKS:

1 Craig Larman, "Applying UML and Patterns: An Introduction to Object Oriented Analysis and Design and the Unified Process", 2nd ed., Pearson Education Asia, 2002.
2 Simon Sennet, Steve McRobb, and Ray Farmer, "Object Oriented Systems Analysis and Design using UML", 2nd ed., McGraw Hill, 2002.
3 Andrew Haigh, "Object-Oriented Analysis & Design," 1st ed., Tata McGraw-Hill, 2001.
4 Ian H.Witten, Eibe Frank, Mark A. Hall, Data Mining: Practical Machine learning tools and techniques, 3rd Edition.
5 www.cs.waikato.ac.nz/ml/weka.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

L	T	P	C
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16MC1501 MOBILE APPLICATION DEVELOPMENT

COURSE OUTCOMES:

At the end of the course students are able to

1. Understand and apply the key technological principles and methods for delivering and maintaining mobile applications.
2. Evaluate and contrast requirements for mobile platforms to establish appropriate strategies for development and deployment.
3. Develop and apply current standard-compliant scripting/programming techniques for the successful deployment of mobile applications targeting a variety of platforms.
4. Carry out appropriate formative and summative evaluation and testing utilizing a range of mobile platforms.
5. Interpret a scenario, plan, and design and develop a prototype hybrid and native mobile application.

UNIT-I :

J2ME Overview -Java 2 Micro Edition and the World of Java, Inside J2ME, J2ME and Wireless Devices

Small Computing Technology: Wireless Technology, Radio Data Networks, Microwave Technology, Mobile Radio Networks, Messaging, Personal Digital Assistants

J2ME Architecture and Development Environment- J2ME Architecture, Small Computing Device Requirements, Run-Time Environment, MIDlet Programming, Java Language for J2ME, J2ME Software Development Kits, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite, J2ME Wireless Toolkit.

J2ME Best Practices and Patterns*:* The Reality of Working in a J2ME World, Best Practices

Commands, Items, and Event Processing: J2ME User Interfaces, Display Class, The Palm OS Emulator, Command Class, Item Class, Exception Handling

UNIT-II:

High-Level Display Screens: Screen Class, Alert Class, Form Class, Item Class, List Class, Text Box Class, Ticker Class

Low-Level Display Canvas: The Canvas, User Interactions, Graphics, Clipping Regions, Animation

UNIT-III:

Record Management System- Record Storage, Writing and Reading Records, Record Enumeration, Sorting Records, Searching Records, Record Listener.

JDBC Objects: The Concept of JDBC, JDBC Driver Types, JDBC Packages, Overview of the JDBC Process, Database Connection, statement Objects, Result set, Transaction Processing,

Metadata, Data Types, Exceptions.

UNIT-IV:

JDBC and Embedded SQL: Model Programs, Tables, Indexing, Inserting Data into Tables, Selecting Data from a Table, Metadata, Updating Tables, Deleting Data form a Table, Joining Tables, Calculating Data, Grouping and Ordering Data, Sub queries, VIEWs.
Generic Connection Framework: The Connection, Hypertext Transfer Protocol, Communication Management Using HTTP Commands, Session Management, Transmit as a Background Process.

TEXT BOOKS:

1 J2ME: The Complete Reference, James Keogh, Tata McGraw-Hill.
2 Enterprise J2ME: Developing Mobile Java Applications – Michael Juntao Yuan, Pearson Education, 2004

REFERENCE BOOKS:

1 Beginning Java ME Platform, Ray Rischpater, Apress, 2009
2 Beginning J2ME: From Novice to Professional, Third Edition, Sing Li, Jonathan B. Knudsen, Apress, 2005

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

L	T	P	C
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16MC1502 BIG- DATA TECHNOLOGIES

COURSE OUTCOMES:

At the end of the course students are able to

1 Identify the need for big data analytics for a domain.
2 Apply big data analytics for a given problem.
3 Suggest areas to apply big data to increase business outcome.
4 Use Hadoop, Map Reduce Framework handle massive data.

UNIT-I :

Introduction to Big Data:

Analytics – Nuances of big data – Value – Issues – Case for Big data – Big data options Team challenge – Big data sources – Acquisition – Nuts and Bolts of Big data. Features of Big Data - Security, Compliance, auditing and protection - Evolution of Big data – Best Practices for Big data Analytics - Big data characteristics - Volume, Veracity, Velocity, Variety.

UNIT-II:

Applications of Big Data & Data Analysis:

Drivers for big data – Automation – Monetization- Applications of Big Data.- Social Media Command Center-Product knowledge hub-infrastructure and knowledge hub-Product selection, Design and Engineering- Location Based services- Online Advertizing- Improved Risk management. Analytic data sets – Analytic methods –analytic tools – Cognos – Micro strategy - Pentaho.

UNIT-III:

Architectural components:

Massively Parallel Processing Platforms (MPP) - Unstructured data analytics and Reporting-Context sensitive and domain specific searches- Categories and ontology-focus on specific time slice-big data and single view of customer-Data privacy protection- Real time adaptive analytics and Decision engine.

UNIT-IV:

Hadoop Framework:

Big data implementation-Revolutionary, Evolutionary and Hybrid Approaches- Overview of Hadoop- RDBMS (vs) HADOOP- IBM for Big Data – Map Reduce Framework and Architecture. Hadoop Distributed file systems –Features of HDFS- Developing Map reduce – Analyzing big data with twitter.

TEXT BOOKS:

1 Big Data Analytics: Disruptive Technologies for Changing the Game, Dr. Arvind Sathi, MC Press online.
2 Hadoop: The Definitive Guide, Tom White, O'Reilly Media / Yahoo Press, 2012

REFERENCE BOOKS:

1 Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", Wiley and SAS Business Series, 2012.
2 Paul Zikopoulos, Chris Eaton, Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGraw Hill, 2011.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

L	T	P	C
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16MC1503 WIRELESS NETWORKS

COURSE OUTCOMES:

At the end of the course students are able to

1 Study some fundamental concepts in wireless networks.
2 Understand physical as wireless MAC layer alternatives techniques.
3 Learn planning and operation of wireless networks.
4 Study various wireless LAN and WAN concepts.
5 Understand WPAN and geo-location systems.

UNIT-I :

MULTIPLE RADIO ACCESS 9: Medium Access Alternatives: Fixed-Assignment for Voice Oriented Networks Random Access for Data Oriented Networks, Handoff and Roaming Support, Security and Privacy.

WIRELESS WANS 9: First Generation Analog, Second Generation TDMA – GSM, Short Messaging Service in GSM, Second Generation CDMA – IS-95, GPRS - Third Generation Systems (WCDMA/CDMA 2000)

UNIT-II:

WIRELESS LANS 9: Introduction to wireless LANs - IEEE 802.11 WLAN – Architecture and Services, physical Layer- MAC sublayer- MAC Management Sublayer, Other IEEE 802.11 standards,HIPERLAN, WiMax standard.

UNIT-III:

ADHOC AND SENSOR NETWORKS 9106: Characteristics of MANETs, Table-driven and Source-initiated On Demand routing protocols, Hybrid protocols, Wireless Sensor networks-Classification, MAC and Routing protocols.

UNIT-IV:

WIRELESS MANS AND PANS 9: Wireless MANs – Physical and MAC layer details, Wireless PANs – Architecture of Bluetooth Systems, Physical and MAC layer details, Standards.

TEXT BOOKS:

1 William Stallings, "Wireless Communications and networks" Pearson / Prentice Hall of India, 2nd Ed., 2007.
2 Dharma Prakash Agrawal & Qing-An Zeng, “Introduction to Wireless and Mobile Systems”, Thomson India Edition, 2nd Ed., 2007.

REFERENCE BOOKS:

1 Vijay. K. Garg, "Wireless Communication and Networking", Morgan Kaufmann Publishers, 2007.
2 Kaveth Pahlavan, Prashant Krishnamurthy, "Principles of Wireless Networks",Pearson Education Asia, 2002.
3 Gary. S. Rogers & John Edwards, "An Introduction to Wireless Technology", Pearson Education, 2007.
4 Clint Smith, P.E. & Daniel Collins, "3G Wireless Networks", Tata McGraw Hill, 2nd Ed, 2007.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

L	T	P	C
3	0	0	3

16MC1504 CLOUD COMPUTING

COURSE OUTCOMES:

At the end of the course students are able to

1 Compare the strengths and limitations of cloud computing.
2 Identify the architecture, infrastructure and delivery models of cloud computing.
3 Address the core issues of cloud computing such as security, privacy and interoperability.
4 Apply suitable virtualization concept.
5 Design Cloud Services and Set a private cloud.

UNIT-I :

Cloud architecture and model:

Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture. Cloud Models:- Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud –Cloud Solutions - Cloud ecosystem – Service management – Computing on demand.

UNIT-II:

Virtualization

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation.

UNIT-III:

Cloud infrastructure

Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

UNIT-IV:

Security in the Cloud Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

TEXT BOOKS:

1 Kai Hwang, Geoffrey C Fox, Jack G Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
2 Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", TMH, 2009. 4. Kumar Saurabh, "Cloud Computing – insights into New-Era Infrastructure", Wiley India, 2011.
3 John W.Rittinghouse and James F.Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.

REFERENCE BOOKS:

1 George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud" O'Reilly
2 James E. Smith, Ravi Nair, "Virtual Machines: Versatile Platforms for Systems and Processes", Elsevier/Morgan Kaufmann, 2005.
3 Katarina Stanoevska-Slabeva, Thomas Wozniak, Santi Ristol, "Grid and Cloud Computing – A Business Perspective on Technology and Applications", Springer.
4 Ronald L. Krutz, Russell Dean Vines, "Cloud Security – A comprehensive Guide to Secure Cloud Computing", Wiley – India, 2010.
5 Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi, 'Mastering Cloud Computing", TMGH, 2013.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

L	T	P	C
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16MC1505 ADVANCED DATABASE

COURSE OUTCOMES:

At the end of the course students are able to

1 Analyze the asymptotic runtime complexity of algorithms for real world problems developed using different algorithmic methods.
2 Find the optimal solutions by using advanced design and analysis of algorithm techniques like greedy method and dynamic programming.
3 Apply the search space and optimization problem techniques like backtracking and branch and bound method to solve problems optimally where advanced algorithm design techniques fail to find solution.
4 Distinguish the problems and its complexity as polynomial and NP problems and can formulate some real world problems to abstract mathematical problems.

UNIT-I :

Introduction: Distributed Data Processing, Distributed Database System. Distributed DBMS **Architecture:** Architectural Models for Distributed DBMS, DDMBS Architecture
Distributed Database Design: Alternative Design Strategies, Distribution Design issues, Fragmentation, Allocation.

UNIT-II:

Query Processing and decomposition: Query Processing Objectives, Characterization of query processors, Layers of query processing, Query decomposition, Localization of distributed data. **Distributed query Optimization**: Query optimization, Centralized query optimization, Distributed query optimization algorithms.

UNIT-III:

Distributed concurrency control: Serializability, Concurrency control Mechanisms & Algorithms, Time stamped & Optimistic concurrency control Algorithms, Deadlock Management.
Distributed DBMS Reliability: Reliability concepts and Measures, fault-tolerance in Distributed systems, failures in Distributed DBMS, local & Distributed Reliability Protocols, Site failures and Network partitioning.
Parallel Database Systems: Database Series, Parallel Architecture, Parallel DBMS Techniques, Parallel exception problems, Parallel Execution for Hierarchical architecture.

UNIT-IV:

Distributed object Database Management Systems: Fundamental object concepts and Models, Object Distributed Design, Architectural Issues, Object Management, Distributed Object storage, Object Query Processing
Object Oriented Data Model: Inheritance, Object identity, persistent programming languages, persistence of objects, comparing OODBMS and ORDBMS

TEXT BOOKS:

1 M.Tamer OZSU and PatuckValduriez: Principles of Distributed Database Systems, Pearson Edn. Asia, 2001.
2 Stefano Ceri and WillipsePelagatti: Distributed Databases, McGraw Hill.

REFERENCE BOOKS:

1 Henry F Korth, A Silberchatz and Sudershan : Database System Concepts, MGH
2 Raghuramakrishnan and JohhanesGehrke: Database Management Systems,MGH
3 "Fundamentals of Database Systems", RamezElmasri&ShamkantB.Navathe, Fourth Edition, Pearson Education, 2004.
4 "Principles of Distributed Database Systems", M.TamerOzsu , Patrick Ualduriel, Second Edition, PearsonEducation, 2003.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

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16MC1506 E-COMMERCE

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand the foundations and importance of E-Commerce.
2 Analyze the branding and pricing strategies of retailing in E-Commerce.
3 Analyze the impact of E-commerce on business models and strategy.
4 Understand key features of internets, intranets and extranets.
5 Evaluate electronic payment systems.

UNIT-I :

Electronic Commerce - Definition, Framework, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications.
Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT-II:

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.
Inter Organizational Commerce- EDI, EDI Implementation, Value added networks.
Intra Organizational Commerce- Workflow, Automation Customization and internal Commerce, Supply chain Management.

UNIT-III:

Corporate Digital Library- Document Library, digital Document types, Corporate Data Warehouses.
Advertising and Marketing- Information based marketing, Advertising on Internet, On-line marketing process, Market research

UNIT-IV:

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.
Multimedia - Key multimedia concepts, Digital Video and electronic Commerce, Desktop video processing, Desktop video conferencing.

TEXT BOOKS:

1 Ravi Kalakota & A.B. Whinston,"Frontiers of Electronic Commerce", 1st ed., Pearson Education, 2005.

REFERENCE BOOKS:

1 Bharat Bhaskar, "Electronic Commerce – Framework Technologies and Applications", 3rd ed., Tata McGraw Hill, 2008.
2 Ravi Kalakota& A.B. Whinston, "Electronic Commerce – A Manager's Guide", 1st ed.,

Pearson Education, 1997

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

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16MC1507 MIDDLEWARE TECHNOLOGIES

COURSE OUTCOMES:

At the end of the course students are able to

1 Choose appropriate client server computing model for given problem.
2 Design a dynamic remote application with RMI and JDBC Connectivity.
3 Develop client server applications using C#.net.
4 Select appropriate language for homogeneous and heterogeneous objects.
5 Develop real time projects by combining CORBA and database interfacing.

UNIT-I :

Introduction to client server computing: Evolution of corporate computing models from centralized to Distributed computing, client server models. Benefits of client server computing, pitfalls of client server Programming.
Advanced Java: Review of Java concept like RMI and JDBC.

UNIT-II:

Introducing C# and the .NET Platform; Understanding .NET Assemblies, Object –Oriented Programming with C#, Callback Interfaces.
Building c# applications: Type Reflection, Late Binding, and Data Access with ADO.NET.

UNIT-III:

Core CORBA / Java: Two types of Client/ Server invocations-static, Dynamic. The static CORBA, First CORBA program, ORBlets with Applets, Dynamic CORBA-The portable count, The dynamic count
Existential CORBA: CORBA initialization protocol, CORBA activation services, Introduction to Service Oriented Architecture (SOA)

UNIT-IV:

Java Bean Component Model: Events, Properties, Persistency, Introspection of beans, CORBA Beans.
EJBs and CORBA: Object transaction monitors CORBA OTM's, EJB and CORBA OTM's, EJB container frame work, Session and Entity Beans.

TEXT BOOKS:

1 Client/Server programming with Java and CORBA Robert Orfali and Dan Harkey, John Wiley & Sons , SPD 2nd Edition
2 Java programming with CORBA 3rd Edition, G.Brose, A Vogel and K.Duddy, Wiley-dreamtech, India John wiley and sons

REFERENCE BOOKS:

1 Distributed Computing, Principles and applications, M.L.Liu, Pearson Education
2 Client/Server Survival Guide 3rd edition Robert Orfali Dan Harkey & Jeri Edwards, John Wiley & Sons
3 Client/Server Computing D T Dewire, TMH.
4 Programming C#, Jesse Liberty, SPD-O'Reilly.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

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16MC1508 INFORMATION RETRIEVAL SYSTEMS

COURSE OUTCOMES:

At the end of the course students are able to

1 Use different information retrieval techniques in various application areas.
2 Apply IR principles to locate relevant information large collections of data.
3 Analyze performance of retrieval systems when dealing with unmanaged data sources.
4 Implement retrieval systems for web search tasks.

UNIT-I :

Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses,

Information Retrieval System Capabilities - Search, Browse, Miscellaneous.

UNIT-II:

Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction,

Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure

UNIT-III:

Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages

Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters

UNIT-IV:

User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext

Information Visualization: Introduction, Cognition and perception, Information visualization technologies. **Text Search Algorithms:** Introduction, Software text search algorithms, Hardware text search systems.

TEXT BOOKS:

1 Information Storage and Retrieval Systems: Theory and Implementation By Kowalski, Gerald, Mark T Maybury Kluwer Academic Press, 2000.
2 Modern Information RetrivalBy Ricardo Baeza-Yates, Pearson Education, 2007.
3 Information Retrieval: Algorithms and Heuristics By David A Grossman and OphirFrieder, 2nd Edition, Springer International Edition, 2004.

REFERENCE BOOKS:

1 Information Retrieval Data Structures and Algorithms By William B Frakes, Ricardo Baeza-Yates, Pearson Education, 1992.
2 Information Storage &RetievalBy Robert Korfhage – John Wiley & Sons.
3 Introduction to Information Retrieval By Christopher D. Manning and PrabhakarRaghavan, Cambridge University Press, 2008.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

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16MC1509 SOFTWARE PROJECT MANAGEMENT

COURSE OUTCOMES:

At the end of the course students are able to

1 Understand and practice the process of project management and its application in delivering successful IT projects
2 Evaluate a project to develop the scope of work, provide accurate cost estimates and to plan the various activities.
3 Understand and use risk management analysis techniques that identifies the factors that put a project at risk and to quantify the likely effect of risk on project timescales.
4 Identify the resources required for a project and to produce a work plan and resource schedule.
5 Monitor the progress of a project and to assess the risk of slippage, revising targets or counteract drift.
6 Distinguish between the different types of project and follow the stages needed to negotiate an appropriate contract.

UNIT-I :

Conventional software management- Waterfall model, Conventional Software Management performance, Evolution of software economics-Software economics, Pragmatic software cost estimation.

Improving software economics-Reducing Software product size, Improving software processes, Improving team effectiveness, Improving automation, Achieving required quality, Peer inspections

UNIT-II:

The old way and the new-The principles of conventional software Engineering, Principles of modern software management, Transition to an iterative process.

Life cycle phases - Engineering and Production stages, Inception, Elaboration, Construction, Transition phases. Artifacts of the process-The Artifact sets, Management artifacts, Engineering artifacts, Program artifacts

UNIT-III:

Model based software architectures- A Management perspective and technical perspective, Software process work lows, Iteration workflows. Checkpoints of the process- Major mile stones, Minor Milestones, Periodic status assessments.

Iterative process planning-Work breakdown structures, Planning guidelines, Cost and Schedule estimating, Iteration planning process, Pragmatic planning

UNIT-IV:

Project organization and responsibilities- Line of Business Organizations, Project Organizations and evolution of Organizations. Process automation- Automation Building blocks, The Project Environment.

Project control and process instrumentation-The seven core Metrics, Management indicators, Quality indicators, Life cycle exceptions, Pragmatic Software Metrics, Metrics automation tailoring the process- Process discriminates- Modern process transitions. CCPDS-R CASE STUDY-Life cycle overview.

TEXT BOOKS:

1 Software Project Management, Walker Royce: Pearson Education, 2005.
2 Software Project Management, Joel Henry, Pearson Education.

REFERENCE BOOKS:

1 Software Project Management, Walker Royce, Bob Hughes and Mike Cotterell, Tata McGraw-Hill Edition.
2 SoftwareProjectManagementinpractice,PankajJalote,PearsonEducation2005
3 Software Engineering, K.K.Aggarwal & Yogeshsingh, New Age International publishers
4 Software Quality, Mordechai Ben-Menachem/Garry S.Marliss, cengage learning

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

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16MC2510 MOBILE APPLICATION DEVELOPMENT LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Know the components and structure of mobile application development frameworks or Android and windows OS based mobiles.
2 Understand how to work with various mobile application development frameworks.
3 Learn the basic and important design concepts and issues of development of mobile applications.
4 Understand the capabilities and limitations of mobile devices.

List of Experiments:

1: Develop an application that uses GUI components, Font and Colors.
2: Develop an application that uses Layout Managers and event listeners.
3: Develop a native calculator application.
4: Write an application that draws basic graphical primitives on the screen.
5: Develop an application that makes use of database.
6: Develop an application that makes use of RSS Feed.
7 Implement an application that implements Multi threading.
8: Develop a native application that uses GPS location information.
9: Implement an application that writes data to the SD card.
10: Implement an application that creates an alert upon receiving a message.
11: Write a mobile application that creates alarm clock.

REFERENCE BOOKS:

1 J2ME: The Complete Reference, James Keogh, Tata McGraw-Hill.
2 Enterprise J2ME: Developing Mobile Java Applications – Michael Juntao Yuan, Pearson Education, 2004.
3 Beginning Java ME Platform, Ray Rischpater, Apress, 2009.
4 Beginning J2ME: From Novice to Professional, Third Edition, Sing Li, Jonathan B. Knudsen, Apress, 2005.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

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16MC2511 BIG- DATA TECHNOLOGIES LAB

COURSE OUTCOMES:

At the end of the course students are able to

1 Identify the need for big data analytics for a domain.
2 Apply big data analytics for a given problem.
3 Suggest areas to apply big data to increase business outcome.
4 Use Hadoop, Map Reduce Framework handle massive data.

List of Experiments:

1: Set up a pseudo-distributed, single-node Hadoop cluster backed by the Hadoop Distributed File System, running on Ubuntu Linux. After successful installation on one Node, configuration of a multi-node Hadoop cluster (one master and multiple slaves).
2: MapReduce application for word counting on Hadoop cluster.
3: Unstructured data into NoSQL data and do all operations such as No SQL query with API.
4: K-means clustering using map reduce.
5: Page Rank Computation.
6: Mahout machine learning library to facilitate the knowledge build up in big data analysis.
7: Application of Recommendation Systems using Hadoop/mahout libraries.

REFERENCE BOOKS:

1 Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", Wiley and SAS Business Series, 2012.
2 Paul Zikopoulos, Chris Eaton, Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGraw Hill, 2011.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

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16MC2512 **SEMINAR**

COURSE OUTCOMES:

Objectives: To get involved with the latest advancements and developments to enhance communication and presentation skills, exchange of ideas, greater connectivity to develop a research bent of mind.

For the seminar, the student shall collect the information on a specialized relevant topic and prepare a report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the Department Committee consisting of Head of the department, Seminar Supervisor and a Senior Faculty Member. Each Seminar shall be evaluated for 75 marks (Internal 25 Marks and External 50 Marks) External marks break up of 10 marks for report, 10 for subject content, 20 for presentation and 10 for queries.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 5th Semester

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16MC2513 **INTERNSHIP**

COURSE OUTCOMES:

At the end of the course students able to

1 develop awareness, understanding and capacity in the specific roles and responsibilities in an industry
2 develop and refinement of technical and professional skills

All the students shall undergo the summer internship during summer break after 4th semester. The minimum internship period is four weeks and the students have an option of choosing their own industry/area of interest, which may be related to their respective branch or any other service oriented task. A self study report for the internship shall be submitted and evaluated during the 5th semester and will be evaluated for a total of 75 marks consisting of 25 marks for internal assessment and 50 marks for semester end examination. Internal assessment shall be done by the internship supervisor. Semester end examination for 50 marks shall be conducted by two examiners, one of them being internship supervisor as internal examiner and an external examiner nominated by the Principal from the panel of experts recommended by HOD.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR (AUTONOMOUS)

MCA 6th Semester

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16MC2601 **PROJECT WORK**

COURSE OUTCOMES:

1 Identify a problem of current relevance to society
2 Formulate the problem and identify suitable modeling paradigm.
3 Analyze the problem and identify the solution methodology

Students are required to take up a project work, in which the student can choose any specific problem of Industry or Industry based project work. Alternatively it can be secondary source based or Field based project work. Before the commencement of the project work each student is required to submit a synopsis indicating the objectives, Methodology, Framework for analysis, Action plan with milestones in order to have clarity for the subsequent work. The project should have an internal faculty as guide. The student can initiate the project work in the penultimate semester of the course.