

# **ACADEMIC REGULATIONS COURSE STRUCTURE & SYLLABI**

**MCA Regular Three Year Degree Course**  
(For the Batches Admitted From 2012-2013)

**MASTER OF COMPUTER APPLICATIONS**



**SRI VENKATESWARA COLLEGE OF ENGINEERING AND  
TECHNOLOGY (AUTONOMOUS)**

**R.V.S. Nagar, CHITTOOR – 517 127, A.P**

**Phones: (08572) 246339, 245044 Fax: (08572) – 245211**



### **PROGRAMME OBJECTIVES**

- The broad objective of the **MCA programme** is to prepare graduate students for productive **careers in software industry and academia** by providing an **outstanding environment for teaching and research** in the core and emerging areas of the discipline.
- The programme's thrust is on giving the students a thorough and sound background in theoretical and application-oriented courses relevant to the **latest computer software development**.
- The programme emphasizes the application of software technology to solve mathematical, computing, communications / networking and commercial problems.

### **PROGRAMME OUTCOMES**

- Graduates from the MCA find employment in a variety of positions within the software and hardware centered professions.
- Students who specialize in system programming, networking, embedded systems, web applications, database management and allied streams can make a mark in the wide spectrum of opportunities presented by demanding area of Information technology.



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY**  
**(AUTONOMOUS)**  
**(AFFILIATED TO JNTUA, ANANTAPUR)**  
**ACADEMIC REGULATIONS**  
**M.C.A REGULAR 3 YEAR DEGREE PROGRAMME**  
**(FOR THE BATCHES ADMITTED FROM THE ACADEMIC YEAR 2012-13)**

The Jawaharlal Nehru Technological University Anantapur shall confer M.C.A Post Graduate degree to candidates who are admitted to the Master of Computer Applications Programs and fulfill all the requirements for the award of the degree.

**1.0 ELIGIBILITY FOR ADMISSIONS:**

Admission to the above programme shall be made subject to the eligibility, qualifications and specialization prescribed by the competent authority for each programme, from time to time.

Admissions shall be made either on the basis of merit rank obtained by the qualified candidates at an Entrance Test conducted by the University or on the basis of ICET score, subject to reservations and policies prescribed by the Government from time to time.

**2.0 ADMISSION PROCEDURE:**

As per the existing stipulations of AP State Council for Higher Education (APSCHE), Government of Andhra Pradesh, admissions are made into the first year as follows:

- a) Category –A seats are to be filled by Convenor through ICET score.
- b) Category-B seats are to be filled by Management as per the norms stipulated by Government of A.P.

**3.0 COURSE WORK:**

- 3.1. A Candidate after securing admission must pursue the M.C.A course of study for Six Semesters duration.
- 3.2. Each semester shall have a minimum of 16 instructional weeks.
- 3.3. A candidate admitted to a programme should complete it within a period equal to twice the prescribed duration of the programme from the date of admission.

**4.0 ATTENDANCE:**

- 4.1. A candidate shall be deemed to have eligibility to write end semester examinations if he has put in at least 75% of attendance on cumulative basis of all subjects/courses in the semester.
- 4.2. Condonation of shortage of attendance up to 10% i.e., from 65% and above and less than 75% may be given by the college on the recommendation of the Principal.
- 4.3. Condonation of shortage of attendance shall be granted only on medical grounds and on representation by the candidate with supporting evidence.
- 4.4. If the candidate does not satisfy the attendance requirement he is detained for want of attendance and shall reregister for that semester. He shall not be promoted to the next semester.

**5.0 EVALUATION:**

The performance of the candidate in each semester shall be evaluated subject wise, with a maximum of 100 marks for Theory and 100 marks for practicals, on the basis of Internal Evaluation and End Semester Examination.

- 5.1. For the theory subjects 60% of the marks will be for the External End Examination. While 40% of the marks will be for Internal Evaluation, based on the better of the marks secured in the two Mid Term-Examinations held, one in the middle of the Semester (I-IV units) and another immediately after the completion of instruction (V-VIII) units with four questions to be answered out of five in 2 hours, evaluated for 40 marks.

- 5.2. For practical subjects, 60 marks shall be for the End Semester Examinations and 40 marks will be for internal evaluation based on the day to day performance (25marks) and practical test at the end of the semester (15marks).
  - 5.3. For Seminar there will be an internal evaluation of 50 marks. A candidate has to secure a minimum of 50% to be declared successful. The assessment will be made by a board consisting of HOD and two internal experts.
  - 5.4. A candidate shall be deemed to have secured the minimum academic requirement in a subject if he secures a minimum of 40% of marks in the End Examination and a minimum aggregate of 50% of the total marks in the End Semester Examination and Internal Evaluation taken together.
  - 5.5. In case the candidate does not secure the minimum academic requirement in any of the subjects (as specified in 5.4) he has to reappear for the Semester Examination either supplementary or regular in that subject, or repeat the subject when next offered or do any other specified subject as may be required.
  - 5.6. **Revaluation / Recounting:**  
Students shall be permitted for request for recounting/revaluation of the year / Semester-End examination answer scripts within a stipulated period after payment of prescribed fee. After recounting or revaluation, records are updated with changes if any and the student will be issued a revised grade sheet. If there are no changes, the same will be intimated to the students.
  - 5.7 **Supplementary Examination:**  
In addition to the regular year/ Semester- End examinations conducted, the College may also schedule and conduct supplementary examinations for all the subjects of other year/ semesters when feasible for the benefit of students. Such of the candidates writing supplementary examinations may have to write more than one examination per day.
- 6.0 RE-REGISTRATION:**  
**Following are the conditions to avail the benefit of improvement of internal evaluation marks**
- 6.1. The candidate should have completed the course work and obtained examinations results for six semesters.
  - 6.2. He should have passed all the subjects for which the internal evaluation marks secured are more than or equal to 50%.
  - 6.3. Out of the subjects the candidate has failed in the examination due to Internal evaluation marks secured being less than 50%, the candidate shall be given one chance for each Theory subject and for a maximum of **three** Theory subjects for Improvement of Internal evaluation marks.
  - 6.4. The candidate has to re-register for the chosen subjects and fulfill the academic requirements.
  - 6.5. For each subject, the candidate has to pay a fee equivalent to one third of the semester tuition fee along with the requisition to the Principal of the college.
  - 6.6. In the event of availing the Improvement of Internal evaluation marks, the internal evaluation marks as well as the End Examinations marks secured in the previous attempt(s) for the reregistered subjects stand cancelled.
- 7.0 EVALUATION OF PROJECT WORK:**  
Every candidate shall be required to submit thesis or dissertation after taking up a topic approved by the college/ institute.
- 7.1. **Registration of Project work:** A candidate is permitted to register for the project work after satisfying the attendance requirement of all the courses (theory and practical courses of I to V Sem)
  - 7.2. An Internal Departmental Committee (I.D.C) consisting of HOD, Supervisor and one internal senior teacher shall monitor the progress of the project work.
  - 7.3. The work on the project shall be initiated in the penultimate semester and continued in the final semester. The candidate can submit Project thesis with the approval of I.D.C. at the end of the VI semester instruction as per the schedule. Extension of time within the total permissible limit for completing the programme is to be obtained from the Head of the Institution.

- 7.4. The student must submit status report at least in three different phases during the project work period. These reports must be approved by the I.D.C before submission of the Project Report and award internal assessment marks for 120.
- 7.5. The viva voce examination may be conducted once in two months for all the candidates who have submitted thesis during that period.
- 7.6. Three copies of the Thesis / Dissertation certified in the prescribed form by the supervisor and HOD shall be presented to the HOD. One copy is to be forwarded to the Controller Of Examinations and one copy to be sent to the examiner.
- 7.7. The Dept shall submit a panel of three experts for a maximum of 5 students at a time. However, the Thesis / Dissertation will be adjudicated by one examiner nominated by the Chief Controller Of Examinations.
- 7.8. If the report of the examiner is favorable viva-voce examination shall be conducted by a board consisting of the Supervisor, Head of the Department and the examiner who adjudicated the thesis / dissertation. The board shall jointly award the marks for 180.
- 7.9 A candidate shall be deemed to have secured the minimum academic requirement in the project work if he secures a minimum of 50% marks in the viva-voce examination and a minimum aggregate of 50% of the total marks in the end viva-voce examination and the internal project report taken together. If he fails to get the minimum academic requirement he has to appear for the viva-voce examination again to get the minimum marks. If he fails to get the minimum marks at the second viva-voce examination he will not be eligible for the award of the degree, unless the candidate is asked to revise and resubmit. If the candidate fails to secure minimum marks again, the project shall be summarily rejected.

**8.0 Grades, Grade point Average, Cumulative Grade point Average:**

**8.1 Grade System:** After all the components and sub-components of any subject (including laboratory subjects) are evaluated, the final total marks obtained will be converted to letter grades on a "10 point scale" described below.

<b>% of marks obtained</b>	<b>Grade</b>	<b>Grade Points(GP)</b>
90 to 100	A+	10
80 to 89	A	9
70 to 79	B	8
60 to 69	C	7
50 to 59	D	6
Less than 50 in Sum of Internal & External (or) Less than 24 in External	F	0
Not Appeared	N	0

**8.2 GPA:** Grade Point Average (GPA) will be calculated as given below on a "10 Point scale" as an Index of the student's performance at the end of each semester:

$$\text{GPA} = \frac{\sum(CXGP)}{\sum C}$$

Where C denotes the credits assigned to the subjects undertaken in that semester and GP denotes the grade points earned by the student in the respective subjects

**8.3 CGPA:** At the end of every semester, a Cumulative Grade Point Average (CGPA) on a 10 Point scale is computed considering all the subjects passed up to that point as an index of overall Performance up to that Point as given below:

$$\text{CGPA} = \frac{\sum(CXGP)}{\sum C}$$

Where C denotes the credits assigned to subjects undertaken upto the end of the current semester and GP denotes the grade points earned by the student in the respective courses.

**8.4 Grade sheet:** A grade sheet (Marks Memorandum) will be issued to each student Indicating his performance in all subjects registered in that semester indicating the GPA and CGPA. GPA and CGPA will be rounded off to the second place of decimal.

**9.0 Transcripts:** After successful completion of the entire Program of study, a transcript containing performance of all semesters will be issued as a final record. Duplicate transcripts will also be issued, if required, after payment of requisite fee.

**10.0 Award of Degree:** The Degree will be conferred and awarded by Jawaharlal Nehru Technological University Anantapur, Anantapur on the recommendation of The Principal of SVCET (Autonomous).

**10.1 Eligibility:** A student shall be eligible for the award of M.C.A Degree if he fulfills all the following conditions:

- Registered and successfully completed all the components prescribed in the program of study for which he is admitted.
- Successfully acquired the minimum required credits as specified in the curriculum corresponding to the branch of study within the stipulated time.
- Obtained CGPA greater than or equal to 6.0 (Minimum requirement for declaring as passed.)

**10.2 Award of Class:** Declaration of Class is based on CGPA.

<b>Cumulative Grade Point Average</b>	<b>Class</b>
≥7.0	First Class with Distinction
>6.0 and <7.0	First Class
6.0	Second Class

**11.0 WITH – HOLDING OF RESULTS:**

If the candidate has not paid dues to the University/College or if any case of in-discipline is pending against him, the result of the candidate shall be withheld and he will not be allowed / promoted into the next higher semester. The issue of degree is liable to be withheld in such cases.

**12.0 TRANSITORY REGULATIONS:**

Candidates who have discontinued or have been detained for want of attendance or who have failed after having undergone the course in earlier regulations and wish to continue the course are eligible for admission into the unfinished semester from the date of commencement of class work with the same or equivalent subjects as and when subjects are offered, subject to 5.5 and 3.3 sections. Whereas they continue to be in the academic regulations of the batch they join later.

**13.0 GENERAL:**

- i. The academic regulations should be read as a whole for purpose of any interpretation.
- ii. Disciplinary action for Malpractice/improper conduct in examinations is appended.
- iii. Where the words "he", "him", "his", occur in the regulations, they include "she", "her", "hers".
- iv. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Principal is final.
- v. The college may change or amend the academic regulations or syllabi at any time and the changes or amendments shall be made applicable to all the students on rolls with effect from the dates notified by the college.

\*\*\*\*\*



**Identification of Courses**

**M.C.A**

Each course shall be uniquely identified by an alphanumeric code of width 7 characters as given below.

<b>No. of digits</b>	<b>Description</b>
First two digits	Year of regulations Ex:12
Next one letter	Type of program: A: B. Tech B: M. Tech C: M.B.A D: M.C.A
Next two letters	Code of department: HS/CE/CS/EE/EC/IT/ME/MB/MC
Next two digits	Indicate serial numbers: $\geq 01$

Ex:

12DMC01

12DHS01



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY  
(AUTONOMOUS)  
(AFFILIATED TO JNTUA, ANANTAPUR)  
RULES FOR DISCIPLINARY ACTION FOR MALPRACTICE/IMPROPER CONDUCT IN  
EXAMINATIONS**

	<b>Nature of Malpractices / Improper conduct</b>	<b>Punishment</b>
	<b>If the candidate</b>	
1.(a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year.  The Hall Ticket of the candidate is to be cancelled.
3.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year.

4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
6.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred and forfeits of seat.
7.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the impostor is an outsider, he will be handed over to the police and a case is registered against him.

8.	Refuses to obey the orders of the Chief Superintendent / Assistant Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in-charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction or property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.  Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the Examination committee for further action to award suitable punishment.	

Malpractices identified by squad or special invigilators

1. Punishments to the candidates as per the above guidelines.



**Sri Venkateswara College of Engineering & Technology**  
**[Autonomous]**  
**RVS Nagar, Chittoor – 517127.A.P**

**Department of MCA**

**Course Structure for Master of Computer Applications**

**MCA I-Semester**

S.No.	SUB.CODE	Subject	Periods			Credits	Scheme of Examination (Max. Marks)		
			L	T	P		INT	EXT	TOT
1	12DMB01	Accounting and Financial Management	4	1		4	40	60	100
2	12DHS03	English Language Communication Skills	4	1		4	40	60	100
3	12DHS04	Probability and Statistics	4	1		4	40	60	100
4	12DMC01	Programming in C & Data Structures	4	1		4	40	60	100
5	12DMC02	Information Technology & Business Data Processing	4	1		4	40	60	100
6	12DMC03	C & Data Structures Lab	-	-	3	2	40	60	100
7	12DMC04	IT & BDP Lab	-	-	3	2	40	60	100
8	12DHS05	English Language Communication Skills Lab	-	-	3	2	40	60	100
<b>TOTAL</b>			<b>20</b>	<b>5</b>	<b>9</b>	<b>26</b>	<b>320</b>	<b>480</b>	<b>800</b>

**MCA II-Semester**

S.No.	SUB.CODE	Subject	Periods			Credits	Scheme of Examination (Max. Marks)		
			L	T	P		INT	EXT	TOT
1	12DHS06	Discrete Mathematics	4	1		4	40	60	100
2	12DMC05	Advanced Data Structures through C++	4	1		4	40	60	100
3	12DMC06	Computer Organization	4	1		4	40	60	100
4	12DME01	Operations Research	4	1		4	40	60	100
5	12DMC07	Operating Systems	4	1		4	40	60	100
6	12DMC08	Advanced Data Structures Lab	-	-	3	2	40	60	100
7	12DMC09	Computer Organization Lab	-	-	3	2	40	60	100
8	12DMC10	Operating Systems Lab	-	-	3	2	40	60	100
<b>TOTAL</b>			<b>20</b>	<b>5</b>	<b>9</b>	<b>26</b>	<b>320</b>	<b>480</b>	<b>800</b>

### MCA III-Semester

S.No.	SUB.CODE	Subject	Periods			Credits	Scheme of Examination (Max. Marks)		
			L	T	P		INT	EXT	TOT
1	12DMC11	Database Management Systems	4	1		4	40	60	100
2	12DMC12	Computer Networks	4	1		4	40	60	100
3	12DMC13	Linux Programming	4	1		4	40	60	100
4	12DMC14	Software Engineering	4	1		4	40	60	100
5	12DMC15	Java Programming	4	1		4	40	60	100
6	12DMC16	Database Management Systems Lab	-	-	3	2	40	60	100
7	12DMC17	Java Programming Lab	-	-	3	2	40	60	100
8	12DMC18	Linux Lab	-	-	3	2	40	60	100
		<b>TOTAL</b>	<b>20</b>	<b>5</b>	<b>9</b>	<b>26</b>	<b>320</b>	<b>480</b>	<b>800</b>

### MCA IV-Semester

S.No.	SUB.CODE	Subject	Periods			Credits	Scheme of Examination (Max.Marks)		
			L	T	P		INT	EXT	TOT
1	12DMC19	Object Oriented Analysis and Design (using UML)	4	1		4	40	60	100
2	12DMC20	Advanced Web Technologies	4	1		4	40	60	100
3	12DMC21	Multimedia and Application Development	4	1		4	40	60	100
4		Elective – I	4	1		4	40	60	100
5		Elective – II	4	1		4	40	60	100
6	12DMC26	UML Lab	-	-	3	2	40	60	100
7	12DMC27	Multimedia and Application Development Lab	-	-	3	2	40	60	100
8	12DMC28	Advanced Web Technologies Lab	-	-	3	2	40	60	100
		<b>TOTAL</b>	<b>20</b>	<b>5</b>	<b>9</b>	<b>26</b>	<b>320</b>	<b>480</b>	<b>800</b>

**Elective – I**

- 12DMC22** -- Scripting Languages  
(Perl, PHP, Python & MYSQL)  
**12DMC23** -- Human Computer Interaction  
**12DMB02** -- Managerial Economics

**Elective – II**

- 12DMC24** -- Artificial Intelligence  
**12DMC25** -- Content Management Systems  
**12DCE01** -- GIS



### MCA V-Semester

S.No.	SUB. CODE	Subject	Periods			Credits	Scheme of Examination (Max. Marks)		
			L	T	P		INT	EXT	TOT
1	12DMC29	Mobile Application Development	4	1		4	40	60	100
2	12DMC30	Data Warehousing and Mining	4	1		4	40	60	100
3	12DMC31	DOT NET Technologies	4	1		4	40	60	100
4		Elective-III	4	1		4	40	60	100
5		Elective - IV	4	1		4	40	60	100
6	12DMC37	Mobile Application Development Lab	-	-	3	2	40	60	100
7	12DMC38	Data Warehousing and Mining Lab	-	-	3	2	40	60	100
8	12DMC39	DOT NET Lab	-	-	3	2	40	60	100
		<b>TOTAL</b>	<b>20</b>	<b>5</b>	<b>9</b>	<b>26</b>	<b>320</b>	<b>480</b>	<b>800</b>

**Elective - III**

**12DMC32** -- Middle Ware Technologies

**12DMC33** -- Mobile OS (**Symbian OS**)

**12DMB03** -- Organizational Behaviour

**Elective - IV**

**12DMC34** -- Software Testing Methodologies

**12DMC35** -- Advanced Databases

**12DMC36** --Network Security & Cryptography

### MCA VI-Semester

S.No.	SUB.CODE	Subject	Periods			Credits	Scheme of Examination (Max. Marks)		
			L	T	P		INT	EXT	TOT
1	12DMC40	Seminar	-	-	-	2	50		50
2	12DMC41	Project Work	-	-	-	12	120	180	300
		<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14</b>	<b>170</b>	<b>180</b>	<b>350</b>



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – I Semester

L	T	P	C
4	1	0	4

**12DMB01 - ACCOUNTING AND FINANCIAL MANAGEMENT**

**Objectives:**

1. To give illustration on financial management practices and policies, processes, techniques and strategies that are used in the financial management.
2. To develop knowledge on the type and characteristics of problems and the possibility of the occurrence of financial management problems, and to increase the ability to handle the problems through reliable approach and problem solving strategy development.

**Outcomes:**

After Completion of the course the student will be able to

1. Use of Accounting information to managers with in the organization
2. Informs the business decision & control the Management Functions

**UNIT I:**

Introduction to Accounting: Principles, concepts and conventions, double entry system of accounting, classification of accounts and debit-credit rules.

**UNIT II:**

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.

**UNIT III:**

Introduction to Financial Management: Meaning and scope, role of financial manager, objectives of time value of money – goals of financial management, leverages: operation, financial leverage and combined leverage.

**UNIT IV:**

Capital Structure: Cost of capital: cost of equity, preference shares, bonds – weighted average cost of capital – capital gearing – overcapitalization and undercapitalization, sources of finance.

**UNIT V:**

Financial Analysis through ratios: Ratio Analysis – classification of ratios – short term solvency and long term solvency – profitability ratios – analysis and interpretation of financial statements through ratios of liquidity, solvency and profitability.

**UNIT VI:**

Funds Flow and Cash Flow Analysis: Meaning, Importance, statement of changes in working capital, statement of sources and application of funds. Cash flow analysis: cash flow statements: preparation, analysis and interpretation.

**UNIT VII:**

Break Even Analysis: Concept of Break Even Point, Cost-Volume-Profit Analysis, Determination of Break Even Point, Margin of Safety and P/V ratio, Impact of changes in cost or selling price on BEP, Practical applications of Break Even Analysis.

**UNIT VIII:**

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 (AAR), Net Present Value Method(NPV) and Internal Rate of Return (IRR) -simple problems.

**TEXT BOOKS:**

1. S.N.Maheshwari, *Financial Accounting*, Sultan Chand, 2009.
2. Van Horne, James,C., *Financial Management and Policy*, Pearson ,2009.

**REFERENCES:**

1. Tulsian, *Financial Accounting*, S Chand, 2009.
2. Khan and Jain, *Financial Statement Analysis*, PHI, 2009
3. I.M.Pandey, *Financial Management*, Vikas Publications
4. Bhat Sundhindra, *Financial Management*, Excel: 2009
5. Prasanna Chandra, *Financial Management*, T.M.H, 2009.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – I Semester

L	T	P	C
4	1	0	4

**12DHS03 - ENGLISH LANGUAGE COMMUNICATION SKILLS**

**Objectives:**

1. *The Language Lab focuses on the recognizing and production practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts.*
2. *To expose the students to a variety of self-instructional, learner-friendly modes of language learning.*
3. *To train them to use language effectively to face interviews, group discussions, public speaking.*

**Outcomes:**

*After Completion of the course the student will be able to*

1. *Expose them to different techniques in resume preparation, report writing, format-making etc.*
2. *Cultivate the habit of reading passages from the computer monitor, thus equip them with the required facility to face computer-based competitive exams such GRE, TOEFL, GMAT etc.*

**Unit –I:** Vocabulary building-Synonyms and Antonyms, Word roots, One-word substitutes, Prefixes and Suffixes, Idioms and phrases

**UNIT-II:** Informal conversation Vs Formal expression - Verbal and non-verbal communication, barriers to effective communication – kinesics

**UNIT-III:** Types of Communication - Oral, aural, Writing and reading - Word-Power - Jargons - rate of speech, pitch, tone - Clarity of voice

**UNIT-IV:** Technical presentations - types of presentation –video conferencing-- participation in meetings - chairing sessions.

**UNIT-V:** Formal and informal interviews – Pre-interviewing planning - ambiance and polemics - interviewing in different settings and for different purposes e.g., eliciting and giving information, interview through tele and video conferencing, recruiting, performance appraisal

**UNIT-VI:** Written communication - differences between spoken and written communication - features of effective writing such "as clarity, brevity, appropriate tone clarity, balance etc.- GRE, TOEFL models

**Unit–VII:** Letter-writing - business letters – pro forma culture - format - style – effectiveness, promptness - Analysis of sample letters collected from industry - email, fax.

**Unit–VIII:** Technical Report writing - Business and Technical Reports – Types of reports - progress reports, routine reports - Annual reports - formats - Analysis of sample reports from industry - Synopsis and thesis writing

**REFERENCES:**

- M Ashraf Rizvi, Effective Technical Communication, Tata Mc.Graw-Hill Pub,company Ltd
- Andrea J. Rutherford: Basic Communication Skills for Technology, Pearson Education Asia, New Delhi.
- Herbert Puchta and Jeff Stranks, GRE and TOEFL; Kaplan and Baron's English in Mind, Cambridge
- Meenakshi Raman and Sangeeta sharma, Technical Communication, Oxford Univ.Press.
- Lenne Sen, Communication Skills, Prentice –Hall of India Pvt. Ltd., New Delhi.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – I Semester

L	T	P	C
4	1	0	4

**12DHS04 - PROBABILITY AND STATISTICS**

**Objectives:**

1. To revise elementary concepts and techniques.
2. To extend and formalize knowledge of the theory of probability and random variables
3. To introduce new techniques for carrying out probability calculations and identifying probability distributions

**Outcomes:**

After Completion of the course the student will be able to

1. The students become familiar with the Sampling Distributions like with replacement and without replacement
2. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it.
3. Student uses a variety of strategies to investigate mathematical models of situations involving Binomial, Poisson's and Normal distribution

**UNIT – I**

**Probability:** Sample Space and events-probability-The axioms of probability-Some Elementary theorems-Conditional probability-Bayes's theorem.

**UNIT- II**

**Random variables:** Discrete and continuous –Distribution –Distribution function.

**UNIT – III**

**Distribution:** Binomial, Poisson and Normal distribution – related properties.

**UNIT- IV**

**Sampling Distribution:** Populations and samples-Sampling distributions of mean (known and unknown) proportions, sums and differences.

**UNIT – V**

**Estimation:** Point estimation-interval estimation-Bayesian estimation

**UNIT- VI**

**Test of hypothesis:** Means and proportions-Hypothesis concerning one and two means-Type I and Type II errors. One -tail, two -tail tests.

**UNIT – VII**

**Tests of significance:** Student's t-test, F-test,  $\chi^2$  – test, Estimation of proportion.

**UNIT-VIII**

**Curve fitting:** The method of least squares – Interfaces based on the least squares estimations –Curvilinear regression – multiple regressions- correlation for univariate and bivariate distributions.

**TEXT BOOKS:**

1. T.K.V.Iyengar, B.krishna Gandhi, S.Ranganathan, M.V.S.S.N.Prasad, *Probability and statistics for MCA*, S.Chand and Company Ltd.
2. Gupta, Kapoor , *Mathematical Statistics*, S.Chand.

**REFERENCES:**

1. Murray R Spiegel, *Probability and Its Applications*, Schaum Series, TMH
2. B.V.Ramana, *Engineering Mathematics*, TMH., 2002,
3. J.S.Milton, Jesse C.Arnold, *Introduction to probability and statistics*, 4/e, TMH.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – I Semester

L	T	P	C
4	1	0	4

**12DMC01 - PROGRAMMING IN C & DATA STRUCTURES**

**Objectives:**

1. To learn structured programming language, Problem Solving steps using control structures in c
2. To learn Effective Memory Handling using Dynamic Memory Allocation Concepts, Data Handling using Files
3. Basic operations of linear and non-linear data structures

**Outcomes:**

After Completion of the course the student will be able to

1. Develop a program a structured Programming Using C
2. Develop a Memory Handling work & Sequential Data file handling.
3. Maintain data using proper data organizing structures

**UNIT –I:**

**Introducing C:** C Fundamentals, Keywords & Identifiers, Declare Variables, Preprocessor Statements, Expressions, Operators

**UNIT –II:**

**Looping & Branches:** Conditional Statements, Looping Structures, String Handling Functions, Arrays.

**UNIT –III:**

**Functions;** Built-in Functions, User Defined Functions, Recursion, Structures, Unions, Enumeration, Memory Allocation Methods

**UNIT –IV:**

**Pointers:** Introduction, Pointer Types and Arrays, Pointers and Strings, Pointers and Structures, Pointers to Arrays, Pointers and Dynamic Allocation Methods, Pointers to Functions

**UNIT -V:**

**File Handling in C:** Opening & Closing Files, Reading & Writing Data, Deleting Files, Standard Input and Output in C, Sequential and Random Access File.

**UNIT –VI:**

**Data Structures:** Basics of Data Structures, Linked list: Definition, Single linked lists, Doubly linked lists, Circular linked lists, Circular Double linked lists, Applications of Linked list: Sparse Matrix Manipulation, Polynomial Representation

**UNIT –VII:**

**Stacks:** Introduction, Definition, Representation of Stacks- Arrays and Linked lists, Operations on stacks, Applications of stacks-Evaluation of Arithmetic Expression, Implementation of Recursion, Factorial Calculations, Towers of Hanoi.

**UNIT –VIII:**

**Queues:** Introduction, Definition, Representation of Queues- Arrays and Linked lists, Various Queue structures, Operations on Queues, Applications, Priority queues.

**TEXT BOOKS:**

1. J.R. Hanly, Ashok N. Kamthane, A. Ananda Rao, *Programming in C and Data Structures*, Pearson Education.
2. B.A.Forouzan and R.F. Gilberg, *C Programming & Data Structures*, 3/e, Cengage Learning.
3. Trembley, Sorenson, *An Introduction to Data Structures With Applications*, 2/e, TMH.

**REFERENCES:**

1. Stephen G. Kochan, *Programming in C -III Edition*, Pearson Eductaion.
2. Samanta, "*Classic Data Structures*", 1/e, 2001, PHI.
3. J.A. Jones & K. Harrow, *C Programming with problem solving*, Dreamtech Press
4. A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, *Data Structures using C -8/e*, Pearson Education / PHI,.



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – I Semester

L	T	P	C
4	1	0	4

**12DMC02 - INFORMATION TECHNOLOGY & BUSINESS DATA PROCESSING**

**Objectives:**

1. To Learn Basic Fundamentals of Word Processing, Spreadsheet processing and Animation using word, excel and powerpoint.
2. To Learn Procedural Programming and structured design in COBOL
3. To Learn Different types of Data File Handling Methods ( Sequential, Indexed, Random & Relative File Processing)

**Outcomes:**

After Completion of the course the student will be able to

1. Handle data in structured format using MS-Office Package like MS-Word, Excel and Power Point
2. Develop Business Application for data processing in a procedure manner using COBOL.
3. Handle data in files using Effective file handling methodology as required.

**UNIT –I**

**PC HARDWARE:** Peripherals of a computer, components in a CPU and its functions. CPU block diagram, Assemble the PC, Hardware & Software Troubleshooting

**MS Word:**

Basics of MS Word, Templates, Paragraphs, Graphs, Frames, Borders, Styles, Tables, Inserting Watermarks, , Graphics, Page Layouts , Calculations, Page Setup, Mail Merge

**UNIT –II****MS- Excel:**

Basics of MS Excel, Overview of Toolbars, Gridlines, Formatting Cells, Summation, Auto fill, Formatting Text, Conditional Formatting, Functions, Filters, Sorting, Totals and Sub Totals, Managing Windows, Multiple Windows, Splitting Windows, Freezing panes, Linking data, Tool pack, Goal seek, pivot table, Charting, Macros

**UNIT –III****MS-Powrpoint:**

Basics of MS Powerpoint, Creating & Formatting a Presentation, Drawing Toolbars, Inserting and Formatting text with in a Shape, Ordering and Grouping Object, Flow Diagrams, Linking and Embedding Objects, Speaker Notes and Handouts.

**UNIT –IV**

**The IDENTIFICATION and ENVIRONMENT DIVISIONS :** Basic Structure of a COBOL program, Coding Requirements of the Identification Division, The Sections of the Environment division, Assigning files to Devices in the Environment Division.

**The DATA DIVISION :** Systems Design considerations, Forming Data-Names, The FILE SECTION of the Data Division, Types of Data, The working-Storage section of the Data division.

Coding Complete COBOL Programs: The PROCEDURE DIVISION, The format of the Procedure division, Statements typically coded in the Main Module of Batch Programs, Statements typically coded for Processing Input records and Producing output records.

### **UNIT -V**

Moving Data, Printing Information, and Displaying Output Interactively, The instruction formats of the MOVE STATEMENT , Numeric MOVE, Nonnumeric or Alphanumeric MOVE, Other Options of the MOVE STATEMENT. PRINTING OUTPUT, Interactive output that is displayed on a screen.

Computing in COBOL: The Arithmetic Verbs and Intrinsic Functions, The Basic Arithmetic Verbs, Options Available with Arithmetic Verbs, The COMPUTE Statement, Use of Signed Numbers in Arithmetic Operations, Improving Program Efficiency with the USAGE Clause.

### **UNIT -VI**

Decision Making Using the IF and EVALUATE Statements, Selection using a simple IF statement, Selection using other Options of the IF statement, CONDITION-NAMES.

Iteration: The simple PERFORM, Iteration using other types of PERFORMs, Using Nested PERFORM varying statements.

Control Break Processing : An introduction to control break processing, Program Requirements for control break processing, Multiple-level control breaks. Data Validation : Avoiding logic errors by validating input, What to do if input errors occur, When data should be validated, Understanding program interrupts.

### **UNIT -VII**

Single level OCCURS clause, Processing data stored in an array, Using an OCCURS clause for Table Handling, Use of the SEARCH statement for Table and Array processing, Varying option of SEARCH verb

SEARCH ALL statement, Multiple level OCCURS Clause. Systems overview of Sequential processing : Sequential file updating, Validity checking in update procedures, Update procedures with multiple transaction records, Rewriting records on a disk.

### **UNIT -VIII**

Sorting and Merging: The SORT features - an overview, Processing data before/after sorting, MERGE statement.

Indexed and Relative File Processing: Systems considerations for organizing disk files, Features of magnetic disks and disk drives, Processing indexed disk files, Processing relative Disk Files, Converting a key field to a relative key.

### **TEXT BOOKS:**

1. Nancy Stern and Robert A.Stern – *Cobol Programming* – Collopy – Pearson Ed.
2. *Structured COBOL programming* 8<sup>th</sup> Ed. - John Wiley & Sons
3. Anitha Goel, *Computer Fundamentals*, Pearson Education.

### **REFERENCES:**

1. *Introduction to information technology*, ITL Education solution Ltd, Pearson education
2. David Anfinson and Ken Quamme , *IT Essentials PC Hardware and Software Companion Guide*, Third Edition – CISCO Press, Pearson education

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – I Semester

L	T	P	C
0	0	3	2

**12DMC03 - C & DATA STRUCTURES LAB**

**Exercise 1.**

- a. Write a C program to find the sum of individual digits of a positive integer.
- b. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
- c. Write a C program to generate all the prime numbers between 1 and n, where value of n is supplied.

**Exercise 2.**

- a. Write a C program to calculate the following Sum:  
Sum= $1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^{10}/10!$
- b. Write a C program to find the roots of a quadratic equation.
- c. Write C program that uses both recursive and non-recursive functions
  - i. To find the factorial of a given integer.
  - ii. To find the GCD (greatest common divisor) of two given integers.
  - iii. To solve Towers of Hanoi problem.

**Exercise 3**

- a. Write a C program to find both the largest and smallest number in a list of integers.
- b. Write a C program that uses functions to perform the following:
  - i. Addition of Two Matrices
  - ii) Multiplication of Two Matrices
- c. Write a C program that uses functions to perform the following operations:
  - i. To insert a sub-string in to a given main string from a given position.
  - ii. To delete n Characters from a given position in a given string.
- d. Write a C program to determine if the given string is a palindrome or not

**Exercise 4**

- a. Write a C program that displays the position or index in the string S where the string T begins, or-1 if S doesn't contain T.
- b. Write a C program to count the lines, words and characters in a given text.
- c. Write a C program to generate Pascal's triangle.
- d. Write a C program to construct a pyramid of numbers.

**Exercise 5**

- a. Write a C program which copies one file to another.
- b. Write a C program to reverse the first n characters in a file.  
(Note: The file name and n are specified on the command line.)
- c. Write a C programme to display the contents of a file.
- d. Write a C programme to merge two files into a third file ( i.e., the contents of the first file followed by those of the second are put in the third file)

**Exercise 6**

Write a C program that uses functions to perform the following operations.:

- i) Creation ii) Insertion iii) Deletion iv) Traversal

on

- a)** singly linked list **b)** doubly linked list **c)** circular linked list

**Exercise 7**

- a. Write C programs that implement stack (its operations) using
  - i) Arrays ii) Pointers
- b. Write C programs that implement Queue (its operations) using
  - i) Arrays ii) Pointers

**Exercise 8**

Write a C program that uses Stack operations to perform the following:

- i) Converting infix expression into postfix expression
- ii) Evaluating the postfix expression

**REFERENCES:**

- 1.M.Cooper, *The Spirit of C, an introduction to modern programming*, Jaico Publishing House.
2. K.R. Venugopal and S.R. Prasad, *Mastering C*, TMH Publications.
3. V. Rajaraman, *Computer Basics and C Programming*, PHI Publications

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – I Semester

L	T	P	C
0	0	3	2

**12DMC04 - IT & BDP LAB  
INFORMATION TECHNOLOGY LAB**

**MS Word**

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**

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**

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).

**BDP LAB**

1. Develop a COBOL program to understand the arithmetic verbs viz., ADD, SUBTRACT, DIVIDE, MULTIPLY and COMPUTE.
2. Develop a COBOL program for the creation of a sequential data file. Assume suitable record structure.
3. Develop a COBOL program to access a desired record from a sequential file and to print it. Assume appropriate record structure.
4. Develop a COBOL program to create and manipulate an INDEXED file. The manipulation includes accessing a particular record, modify a desired record, add a record and delete a record. Assume a suitable record structure.
5. Develop a COBOL program to create and manipulate a RANDOM file. The manipulation includes accessing a particular record, to modify a desired record, to add a record to an existing file and to delete a record.
6. Develop a COBOL program to illustrate the concepts of REDEFINES and RENAMES clauses in COBOL.
7. Develop a COBOL program illustrating the usage of level-88 entry.
8. Develop a COBOL program for the implementation of 'mid-square' technique.
9. Develop a COBOL program illustrating the OCCURS clause.
10. Develop a COBOL program illustrating the SORT verb. Assume appropriate record structure.
11. Develop a COBOL program illustrating the MERGE verb. Assume appropriate record structure.
12. Develop a COBOL program to implement 'Bubble sort' technique on a file. Assume appropriate record structure.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – I Semester

L	T	P	C
0	0	3	2

**12DHS05 - ENGLISH LANGUAGE COMMUNICATION SKILLS LAB**

*The following course content is prescribed for the English Language Laboratory Practice*

1. Phonetics- Introduction to the Sounds of English – vowels, Diphthongs and consonants
2. Introduction to Stress, Accent, Intonation and Rhythm
3. Interpersonal communications and Situational Dialogues/Role play
4. Oral Presentations/Public speaking
5. Debate
6. Group Discussions
7. Facing interviews
8. Resume preparation

**Exercise 1:** Phonetics –English pronunciation– basics in phonetics- introduction to sounds of English – vowels – diphthongs – consonants – phonetic transcription

**Exercise 2:** Techniques to develop effective word accent- various stress patterns– developing voice quality and tone– intonation– rhythm– rhythm in connected speech

**Exercise 3:** Fundamentals of interpersonal communication– starting a conversation– responding appropriately and relevantly

**Exercise 4:** Dialogues- Formal and informal– using the right body language– role play in different situations.

**Exercise 5:** Importance of Oral Presentations- developing and organizing the presentations– verbal and visual support in presentations– delivering the presentation

**Exercise 6:** Informative, group and special occasion presentations– persuasive presentations

**Exercise 7:** Formal and Informal debate– theory for debating– art of debating

**Exercise 8:** Debate on various topics

**Exercise 9:** Nature of group discussion– characteristics of successful GD’s– strategies– techniques for individual contribution- intervention, summarizing, modulation of voice, body language, relevance, fluency and coherence.

**Exercise 10:** Organizing Group Discussions

**Exercise 11:** Interview Skills– concept and process, pre-interview planning, opening strategies, answering strategies, projecting a positive image, interview through tele and video-conferencing.

**Exercise 12:** Organizing mock interviews

**Exercise 13:** Resume design– structure and presentation, planning, defining the career objective, projecting one’s strengths and skill-sets, summary.

**Exercise 14:** Resume styles– job application letters

**Minimum Requirements**

Computer aided multi media language lab equipped with Computer systems in LAN facility. Conventional Language Lab. with audio and video systems, speakers, headphones and a teacher console so as to accommodate at least 60 students.

**PRESCRIBED SOFTWARE: GLOBARENA**

**Suggested Software:**

- Cambridge Advanced Learners' Dictionary with exercises
- The Rosetta Stone English Library
- Clarity Pronunciation Power
- Mastering English in Vocabulary, Grammar, Spellings, Composition
- Dorling Kindersley series of Grammar, Punctuation, Composition etc.
- Oxford Advanced Learner's Compass, 7th Edition
- Language in Use, Foundation Books Pvt Ltd
- Learning to Speak English - 4 CDs
- Microsoft Encarta
- Murphy's English Grammar, Cambridge
- Time series of IQ Test, Brain-teasers, Aptitude Test etc. English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

**Books Suggested for English lab:**

- Krishna Mohan & Meera Benerji *Developing Communication Skills* by (Macmillan)
- Krishna Mohan & NP Singh *Speaking English Effectively* by (Macmillan)
- John Eastwood, Oxford *Practice Grammar with Answers*, Oxford
- Mark Lester and Larry Beason, *Handbook of English Grammar and Usage*, Tata McGraw-Hill
- T.Balasubramanian *A text book of English Phonetics for Indian Students* by (Macmillan)
- *TOEFL & GRE* (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
- *English Skills for Technical Students*, WBSCTE with British Council, OL
- Robert J Dixson, *Everyday Dialogues in English* by Prentice – Hall of India Ltd.
- Koneru, *Professional Communication* by McGraw Hill.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – II Semester

L	T	P	C
4	1	0	4

**12DHS06 - DISCRETE MATHEMATICS**

**Objectives:**

1. To learn Recursive definitions and solutions of simple of recurrence relations and generating functions
2. To learn Graph algorithms and their application to computer science.
3. To learn Fundamentals of Group theory, Rings and their applications.

**Outcomes:**

After Completion of the course the student will be able to

1. Solve problems involving sets, functions, relations, graphs and trees, Boolean algebra.
2. Calculate number of possible outcomes of elementary combinatorial processes such as permutations and combinations.

**UNIT-I:**

**Mathematical Logic:** Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms.

**UNIT-II:**

**Predicates:** Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving.

**UNIT-III:**

**Set Theory:** Properties of binary Relations, equivalence, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function Comports of functions, recursive Functions, Lattice and its Properties, Pigeon hole principles and its application.

**UNIT-IV:**

**Algebraic structures:** Algebraic systems Examples and general properties, Semi groups and monads, groups sub groups' homomorphism, Isomorphism.

**UNIT-V:**

**Elementary Combinatorics:** Basis of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion.

**UNIT-VI:**

**Recurrence Relation:** Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating funds. Characteristics roots solution of In homogeneous Recurrence Relation.

**UNIT-VII:**

**Graph Theory:** Representation of Graph, DFS, BFS, Spanning Trees, planar Graphs

**UNIT-VIII:**

Graph Theory and Applications, Basic Concepts Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers



**TEXT BOOKS:**

1. Ralph. P.Grimaldi. *Discrete and Combinatorial Mathematics- An Applied Introduction-* 5th Edition –Pearson Education
2. Trembly J.P. & Manohar .P, *Discrete Mathematical Structures with applications to computer science* TMH
3. J.L. Mott, A. Kandel, T.P. Baker, *Discrete Mathematics for Computer Scientists & Mathematicians* Prentice Hall, 1986

**REFERENCES:**

1. Bernand Kolman, Roberty C. Busby, Sharn Cutter *Discrete Mathematical Structures*, Ross, Pearson Education/PHI.
2. Garry Haggard and others, *Discrete Mathematics for Computer science*, Thomson
3. Mallik and Sen, *Discrete Mathematical Structures*, Thomson
4. Dr D.S.Chandrasekharaiaha ,*Mathematical Foundations of computer science* Prism books Pvt Ltd.
5. Lovasz, *Discrete Mathematics*, Springer.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – II Semester

L	T	P	C
4	1	0	4

**12DMC05 - ADVANCED DATA STRUCTURES THROUGH C++**

**Objectives:**

1. To get a clear understanding of object-oriented concepts.
2. To understand object oriented programming through C++.
3. The use of Graphs and Sets in Non-Linear Data Structures

**Outcomes:**

After Completion of the course the student will be able to

1. Gain knowledge about the Object Oriented Programming & Implementation using C++
2. Learn the Advanced Data Handling methods , sorting , searching & storing data in well structured manner.

**UNIT –I:**

**C++ Basics:** Structure of a C++ program, Data types, Declaration of variables, Expressions, Operators, Operator Precedence, Evaluation of expressions, Type conversions, Pointers, Arrays, Pointers and Arrays, Strings, Structures, References. Flow control statement- if, switch, while, for, do, break, continue, goto statements.

Functions-Scope of variables, Parameter passing, Default arguments, inline functions, Recursive functions, Pointers to functions. Dynamic memory allocation and deallocation operators-new and delete, Preprocessor directives.

**UNIT –II:**

**C++ Classes And Data Abstraction:** Class definition, Class structure, Class objects, Class scope, this pointer, Friends to a class, Static class members, Constant member functions, Constructors and Destructors, Dynamic creation and destruction of objects, Data abstraction, ADT and information hiding.

**UNIT –III:**

**Polymorphism:** Function overloading, Operator overloading, Generic programming-necessity of templates, Function templates and class templates.

**Inheritance:** Defining a class hierarchy, Different forms of inheritance, Defining the Base and Derived classes, Access to the base class members, Base and Derived class construction, Destructors, Virtual base class.

**UNIT –IV:**

**Virtual Functions And Polymorphism:** Static and Dynamic bindings, Base and Derived class virtual functions, Dynamic binding through virtual functions, Virtual function call mechanism, Pure virtual functions, Abstract classes, Implications of polymorphic use of classes, Virtual destructors.

**C++ I/O:** I/O using C functions, Stream classes hierarchy, Stream I/O, File streams and String streams, Overloading << and >> operators, Error handling during file operations, Formatted I/O.

**UNIT -V:**

**Exception Handling:** Benefits of exception handling, Throwing an exception, The try block, Catching an exception, Exception objects, Exception specifications, Stack unwinding, Rethrowing an exception, Catching all exceptions, Design issues in exception handling.

**UNIT –VI:**

**Sorting:** Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, Radix Sort and Quick Sort

**Searching :** Linear Search, Binary Search, and Fibonacci Search.

**UNIT –VII:**

**Tress:** Binary Tree, Binary Search Tree (BST), Representation and operations on BST, Recursive and Non- Recursive Tree Traversal Techniques: In order, post order, pre order and applications.

**UNIT –VIII:**

**Special Binary Trees:** Height Balanced Trees, Heaps, Heap Sort, B-Trees, Threaded Binary Trees, Advantages of Special Trees

**TEXT BOOKS:**

1. Yashwant Kanitkar , *Datastructures using C++* ,
2. Michael T.Godrich, Roberto Tamassia, David M.Mount *Data Structures and Algorithms in C++*
3. Herbert Schildt, *C++, The Complete Reference*, 4th Edition, TMH.

**REFERENCES:**

1. R.Lafore, SAMS, Object Oriented Programming in C++, 4th Edition, Pearson Education
2. Trembley, Sorenson, An Introduction to Data Structures With Applications, 2/e, TMH

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – II Semester

L	T	P	C
4	1	0	4

**12DMC06 - COMPUTER ORGANIZATION**

**Objectives:**

1. To have a thorough understanding of the basic structure and operation of a digital computer.
2. To discuss in detail the operation of the arithmetic unit including the algorithms & implementation of fixed-point and floating-point addition, subtraction, multiplication & division.
3. To study the different ways of communicating with I/O devices and standard I/O interfaces.

**Outcomes:**

After Completion of the course the student will be able to

1. To gain knowledge about the Micro Processors
2. To study the hierarchical memory system including cache memories and virtual memory.

**UNIT I:**

NUMBER SYSTEMS AND COMPUTER ARITHMETIC- Signed and unsigned numbers, Addition and subtraction, multiplication, division, Floating point representation, logical operation, Gray code, BCD codes, Error detecting codes, Boolean algebra, Simplification of Boolean expressions, K-Maps. COMBINATIONAL AND SEQUENTIAL CIRCUITS- decoders, Encoders, Multiplexers, Half and Full adders, Shift registers, Sequential circuits- flip-flops.

**UNIT II:**

MEMORY ORGANIZATION-Memory hierarchy, Main memory-RAM, ROM chips, Memory address map, memory contention to CPU, Associative Memory-Hardware logic, match, read and write logic, Cache Memory-Associative mapping, Direct mapping, Set-associative mapping, hit and miss ratio.

**UNIT III:**

MICRO PROGRAMMED CONTROL: Control memory, Address sequencing, microprogram example, design of control unit, Hard wired control, Microprogrammed control

**UNIT IV:**

BASIC CPU ORGANIZATION-Introduction to CPU, Instruction formats-INTEL-8086 CPU architecture-Addressing modes - generation of physical address- code segment registers, Zero, one, two, and three address instructions.

**UNIT V:**

INTEL 8086 ASSEMBLY LANGUAGE INSTRUCTIONS-Data transfer instructions-input- output instructions, address transfer, Flag transfer, arithmetic, logical, shift, and rotate instructions. Conditional and unconditional transfer, iteration control, interrupts and process control instructions, assembler directives, Programming with assembly language instructions.

**UNIT VI:**

INPUT -OUTPUT ORGANIZATION-Peripheral devices, input-output interface-I/O Bus and interface modules, I/O versus Memory bus, isolated versus memory mapped I/O, Modes of transfer-Programmed I/O, Interrupt-initiated I/O, priority interrupts-Daisy chaining, parallel priority, interrupt cycle, DMA- DMA control, DMA transfer, Input output processor-CPU-IOP communication.

**UNIT VII:**

PIPELINE AND VECTOR PROCESSING : Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.

**UNIT VIII:**

MULTI PROCESSORS : Characteristics of Multiprocessors, Interconnection Structures, Interprocessor Arbitration. InterProcessor Communication and Synchronization, Cache Coherence, Shared Memory Multiprocessors.

**TEXT BOOKS:**

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

**REFERENCES:**

1. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, *Computer Organization*, Vth Edition, McGraw Hill.
2. Sivarama P.Dandamudi, *Fundamentals of Computer Organization and Design*, Springer Int. Edition.
3. William Stallings, *Computer Organization and Architecture*, 7th Ed, Pearson/PHI,2007.
4. M. Morris Mano, *Digital Design* , PHI/Pearson Education .

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – II Semester

L	T	P	C
4	1	0	4

**12DME01 - OPERATIONS RESEARCH**

**Objectives:**

1. *Operations research programs prepare people to apply math and science to systems involving human interaction.*
2. *Students learn math, science, and engineering. They learn how to make models to study a problem.*
3. *They also learn to use statistics and information technology.*

**Outcomes:**

*After Completion of the course the student will be able to*

1. *Helps the managers to take better and quicker decisions*
2. *Coordinate all the decisions of the organization. It coordinates all the decisions taken by the different levels of management and the various departments of the organization*

**UNIT I:**

Introduction to Operations Research: Basics definition, scope, objectives, phases, models and limitations of Operations Research, Linear Programming Problem – Formulation of LPP, Graphical solution of LPP, Simplex Method, Artificial variables, big-M method, two-phase method, degeneracy and unbound solutions.

**UNIT II:**

Revised simplex method- Formulation of LP Problems , Computational Procedure, Duality in LP-Introduction, Comparison of solutions of the dual and its primal, Dual simple method.

**UNIT III:**

Transportation Problem- Formulation, solution, unbalanced Transportation problem. Finding basic feasible solutions – Northwest corner rule, least cost method and Vogel's approximation method, Optimality test- the stepping stone method and MODI method.

Assignment model- Formulation, Hungarian method for optimal solution, Solving unbalanced problem, Traveling salesman problem as assignment problem.

**UNIT IV:**

Sequencing models, Solution of Sequencing Problem – Processing n Jobs through 2 Machines – Processing n Jobs through 3 Machines – Processing 2 Jobs through m machines – Processing n Jobs through m Machines.

**UNIT V:**

Replacement Models, Replacement of Items that Deteriorate whose maintenance costs increase with time without change in the money value, Replacement of items that fail suddenly: individual replacement policy, group replacement policy.

**UNIT VI:**

Dynamic programming, Characteristics of dynamic programming, Dynamic programming approach for Priority Management employment smoothening, capital budgeting, Stage Coach/Shortest Path, cargo loading and Reliability problems.

**UNIT VII:**

Games Theory, Competitive games, rectangular game, saddle point, minimax (maximin) method of optimal strategies, value of the game, Solution of games with saddle points, dominance principle, Rectangular games without saddle point – mixed strategy for 2 X 2 games.

**UNIT VIII:**

Inventory models, Inventory costs, Models with deterministic demand – model (a) demand rate uniform and production rate infinite, model (b) demand rate non-uniform and production rate infinite, model (c) demand rate uniform and production rate finite.

**TEXT BOOKS:**

1. A.M. Natarajan, P. Balasubramani, A. Tamilarasi , *Operations Research*, Pearson Education, 2005.
2. P Sankara Iyer, *Operations Research*, Tata McGraw-Hill, 2008.

**REFERENCES:**

1. R. Panneerselvam, *Operations Research*, 2/e, PHI 2008.
2. P. K. Gupta and D. S. Hira, *Operations Research*, S. Chand & co., 2007.
3. J K Sharma, *Operations Research – Theory & Applications* 3/e, Macmillan India Ltd, 2007.
4. Col. D. S. Cheema, *Operations Research*, Laxmi Publications Ltd., 2005.
5. H.S. Kansa & K.D. Kumar, *Introductory Operations Research – Theory and applications*, Springer, 2005.
6. A.B.Rao, *Operations Research* , Jaico Publishers.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – II Semester

L	T	P	C
4	1	0	4

**12DMC07 - OPERATING SYSTEMS**

**Objectives:**

1. To Learn the historical reasons why different features of operating systems were developed, defines and list the functions of an operating system List and explain common features of operating systems
2. To Learn User Interface, System Calls & Structure of OS, Process and CPU Scheduling , Memory Management & File system interface

**Outcomes:**

After Completion of the course the student will be able to

1. Learn evaluation of different types Operating System and their functionalities
2. Learn Internal structure and the function procedure of Operating system in detail.

**UNIT I:**

Operating System Introduction: Operating Systems objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, Special -Purpose Systems

**UNIT II:**

Operating System services, User OS Interface, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation, OS Structure, Virtual Machines.

**UNIT III:**

Process and CPU Scheduling - Process concepts-The Process, Process State, Process Control Block, Threads, Process Scheduling-Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Thread scheduling.

**UNIT IV:**

Process Coordination – Process Synchronization, The Critical Section Problem, Peterson’s solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors

**UNIT V:**

Memory Management and Virtual Memory - Logical & Physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table, Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames, Thrashing.

**UNIT VI:**

File System Interface - The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection. File System Implementation - File System Structure, File System Implementation, Allocation methods, Free-space Management, Directory Implementation, Efficiency and Performance



**UNIT VII:**

Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

**UNIT VIII:**

Protection - System Protection, Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix, Implementation of Access Matrix, Access Control, Revocation of Access Rights, Capability-Based Systems, Language-Based Protection.

Security- The Security problem, Program threats, System and network threats, Cryptography as a security tool, User authentication, Implementing security defenses, Firewalling to protect systems and networks, Computer -security classifications, Case Studies: Linux, Windows.

**TEXT BOOKS:**

1. Abraham Silberchatz, Peter B. Galvin, Greg Gagne, *Operating System Principles* , 8th Edition, Wiley Student Edition
2. W. Stallings, *Operating Systems - Internals and Design Principles*, 6th Edition, Pearson Education.

**REFERENCES:**

1. Andrew S Tanenbaum, *Modern Operating Systems*, 3rd Edition, Pearson/PHI
2. D.M.Dhamdhere, *Operating Systems A concept-based Approach*, 2nd Edition, TMH.
3. B.L.Stuart, *Principles of Operating Systems* , Cengage learning, India Edition.
4. A.S.Godbole, *Operating Systems*, 2nd Edition, TMH
5. P.C.P. Bhatt, *An Introduction to Operating Systems*, PHI.
6. R.Elmasri, A.G.Carrick and D.Levine, *Operating Systems*, Mc Graw Hill.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – II Semester

L	T	P	C
0	0	3	2

**12DMC08 - ADVANCED DATA STRUCTURES LAB**

**List of Sample Problems/Experiments:**

1. Write a **C++** program to find the sum of individual digits of a positive integer.
2. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.  
Write a C++ program to generate the first n terms of the sequence.
3. Write a **C++** program to generate all the prime numbers between 1 and n , where n is a value supplied by the user.
4. Write **C++** programs that use both recursive and non-recursive functions
  - a. To find the factorial of a given integer.
  - b. To find the GCD of two given integers.
  - c. To find the nth Fibonacci number.
5. Write a **C++** program that uses a recursive function for solving Towers of Hanoi problem.
6. Write a **C++** program that uses functions
  - a. To swap two integers.
  - b. To swap two characters.
  - c. To swap two reals. Note: Use overloaded functions.
7. Write a **C++** program to find both the largest and smallest number in a list of integers.
8. Write a **C++** program to sort a list of numbers in ascending order.
9. Write a **C++** program that uses function templates to solve problems-7&8.
10. Write a **C++** program to sort a list of names in ascending order.
11. Write a **C++** program to implement the matrix ADT using a class. The operations supported by this ADT are: a) Reading a matrix. b) Printing a matrix. c) Addition of matrices. d) Subtraction of matrices. e) Multiplication of matrices.
12. Implement the matrix ADT presented in the problem-11 using overloaded operators (<<, >>, +, -, \*) and templates.
13. Implement the complex number ADT in C++ using a class. The complex ADT is used to represent complex numbers of the form  $c=a+ib$ , where a and b are real numbers. The operations supported by this ADT are:
  - a) Reading a complex number.
  - b) Writing a complex number.
  - c) Addition of Complex numbers.
  - d) Subtraction of complex numbers.
  - e) Multiplication of complex numbers.
  - f) Division of complex numbers.
14. Write a C++ program that overloads the + operator and relational operators (suitable) to perform the following operations:
  - a) Concatenation of two strings.
  - b) Comparison of two strings.
15. Implement the complex number ADT in **C++** using a class. The complex ADT is used to represent complex numbers of the form  $c=a+ib$ , where a and b are real numbers. The operations supported by this ADT are:
  - a) Reading a complex number.
  - b) Writing a complex number.
  - c) Addition of Complex numbers.
  - d) Subtraction of complex numbers.
  - e) Multiplication of complex numbers.
  - f) Division of complex numbers.

Note: 1. overload << and >> operators in part a and part b.  
2. overload +, -, \*, / operators in parts c, d, e and f.

16. Write a template based **C++** program that determines if a particular value occurs in an array of values.
17. Write a **C++** program that uses functions to perform the following operations:
  - a. Insert a sub-string into the given main string from a given position.
  - b. Delete n characters from a given position in a given string.
18. Write a **C++** program that uses a function to reverse the given character string in place, without any duplication of characters.
19. Write a **C++** program to make the frequency count of letters in a given text.
20. Write a **C++** program to count the lines, words and characters in a given text.
21. Write a **C++** program to determine if the given string is a palindrome or not.
22. Write a **C++** program to make frequency count of words in a given text.
23. Write a **C++** program that displays the position or index in the string S where the string t begins, or -1 if S doesn't contain t.
24. 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C++ program to find the 2's complement of a binary number.
25. Write a **C++** program that counts the number of 1 bit in a given integer.
26. Write a **C++** program to generate Pascal's triangle.
27. Write a **C++** program to construct of pyramid of numbers.
28. Write a **C++** program to compute the Sine series.
29. Write a **C++** program that converts Roman numeral into an Arabic integer.
30. Write a C++ program which converts a positive Arabic integer into its corresponding Roman Numeral.
31. Write a **C++** program to display the contents of a text file.
32. Write a **C++** program which copies one file to another.
33. Write a **C++** program that counts the characters, lines and words in the text file.
34. Write a **C++** program to change a specific character in a file.

Note: Filename, number of the byte in the file to be changed and the new character are specified on the command line.
35. Write a **C++** program to reverse the first n characters in a file.
36. Write a **C++** program that uses a function to delete all duplicate characters in the given string.
37. Write a **C++** program that uses a function to convert a number to a character string.
38. Write a **C++** program that uses a recursive function to find the binary equivalent of a given non-negative integer n.
39. Write a **C++** program to generate prime numbers up to n using Sieve of Eratosthenes method.
40. Write a **C++** program
  - a) To write an object to a file.
  - b) To read an object from the file.
41. Write **C++** programs that illustrate how the following forms of inheritance are supported:
  - a) Single inheritance
  - b) Multiple inheritance
  - c) Multi level inheritance
  - d) Hierarchical inheritance
42. Write a **C++** program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class.
43. Write a **C++** program that illustrates how run time polymorphism is achieved using virtual functions.
44. Write a **C++** program that illustrates the role of virtual base class in building class hierarchy.
45. Write a **C++** program that illustrates the role of abstract class in building class hierarchy.
46. Write a **C++** program that implements the Bubble Sort a given list of integers in ascending order

47. Write a **C++** program that implements the Selection Sort a given list of integers in ascending order
48. Write a **C++** program that implements the Quick Sort a given list of integers in ascending order
49. Write a **C++** program that implements the Merge Sort a given list of integers in ascending order
50. Write a **C++** program that use both recursive and non recursive functions to perform the searching operations for a Key value in a given list of integers using Linear Search
51. Write a **C++** program that use both recursive and non recursive functions to perform the searching operations for a Key value in a given list of integers using Binary Search
52. Write a **C++** programs to create BST and perform operations on it.
53. Write a **C++** programs to implement recursive and non recursive Tree traversal techniques.

**REFERENCES:**

1. K.R.Venu Gopal, Raj Kumar and T.Ravi Shankar, *Mastering C++*, TMH.
2. D.S.Malik, *C++ Programming*, Cengage Learning.
3. S.Qualline, *Practical C++ Programming*, SPD.
4. E.Balaguruswamy, *Object Oriented Programming with C++*, 4<sup>th</sup> Edition, TMH,2008.
5. S.Sahay, *OOP with C++*, Oxford Higher Education.
6. D.Jana, *C++ and OOP Paradigm*, 2<sup>nd</sup> Edition, PHI
7. S.Subramanian, *Fundamentals of C++ Programming*, Jaico Publishing House.
8. Al Stevens, *C++ Programming*, 7<sup>th</sup> edition, Wiley India.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – II Semester

L	T	P	C
0	0	3	2

**12DMC09 - COMPUTER ORGANIZATION LAB**

**List of Sample Problems/Experiments:**

Write assembly language programs for the following using MASAM.

1. Write assembly language programs to evaluate the expressions:
  - i)  $a = b + c - d * e$
  - ii)  $z = x * y + w - v + u / k$
  - a. Considering 8-bit, 16 bit and 32 bit binary numbers as b, c, d, e.
  - b. Considering 2 digit, 4digit and 8 digit BCD numbers.  
Take the input in consecutive memory locations and results also. Display the results by using "int xx" of 8086. Validate program for the boundary conditions.
2. Write an ALP of 8086 to add two exponential numbers which are in IEEE 754 notation. Display the results by using "int xx" of 8086. Validate program for the boundary conditions.
3. Write an ALP of 8086 to take N numbers as input. And do the following operations on them.
  - a) Arrange in ascending and Descending order.
  - b) Find max and minimum
  - c) Find average Considering 8-bit, 6 bit binary numbers and 2 digit, 4digit and 8 digit BCD numbers. Display the results by using "int xx" of 8086. Validate program for the boundary conditions.
4. Write an ALP of 8086 to take a string of as input (in 'C' format)and do the following Operations on it.
  - a) Find the length
  - b) Find it is Palindrome or not
  - c) Find whether given string substring or not.
  - d) Reverse a string
  - e) Concatenate by taking another sting
 Display the results by using "int xx" of 8086.
5. Write the ALP to implement the above operations as procedures and call from the main procedure.
6. Write an ALP of 8086 to find the factorial of a given number as a Procedure and call from the main program which display the result.
7. Write an assembly language program to encrypt digits as shown below:
 

Input digit : 0 1 2 3 4 5 6 7 8 9

Encrypted digit : 4 6 9 5 0 3 1 8 7 2

The program should accept a string consisting of digits. The encrypted string should be displayed using "int xx" of 8086.

8. Write a procedure to locate a character in a given string. The procedure receives a pointer to a string and character to be located. When the first occurrence of the character is located, its position is returned to main. If no match is found, a negative value is returned. The main procedure requests a character string and a character to be located and displays the result.

9. Write an assembly language program to read a string of characters from the user and that prints the vowel count. Display the results by using "int xx" of 8086.

ex. Input : Advanced Programming in UNIX

Output:

Vowel	count
a or A	3
e or E	1
i or I	3
o or O	1
u or U	1

10. A computer uses RAM chips of 1024 X 1 capacity.

- How many chips are needed, and how should their address lines be connected to provide a memory capacity of 1024 bytes?
- How many chips are needed to provide a memory capacity of 16K bytes?

11. A computer employs RAM chips of 256X8 and ROM chips of 1024 X 8. The computer needs 2K bytes of RAM, 4K bytes of ROM, and four interface units, each with four registers. A memory-mapped I/O configuration is used. The two highest-order bits of the address bus are assigned 00 for RAM, 01 for ROM, 10 for interface registers.

- How many RAM and ROM chips are needed?
- Draw a memory-address map for the system.
- Give the address range in hexadecimal for RAM, ROM and interface.

12. Obtain the complement function for the match logic of one word in an associative memory. Draw the logic diagram for it and compare with the actual match logic diagram.

13. A two-way set associative cache memory uses blocks of four words. The cache can accommodate a total of 2048 words from main memory. The main memory size is 128K X 32.

- Formulate all pertinent information required to construct the cache memory.
- What is the size of the cache memory?

14. A digital computer has a memory unit of 64K X 16 and a cache memory of 1K words. The cache uses direct mapping with a block size of four words.

- How many bits are there in each word of cache, and how are they divided into functions? Include a valid bit.
- How many bits are there in the tag, index, block, and word fields of the address format?
- How many blocks can the cache accommodate?

15. An address space is specified by 24 bits and the corresponding memory space by 16 bits.

- How many words are there in the address space?
- How many words are there in the memory space?
- If a page consists of 2K words, how many pages and blocks are there in the system.

16. A virtual memory has a page size of 1K words. There are eight pages and four blocks. The associative memory page table contains the following entries. Make a list of all virtual addresses(in decimal) that will cause a page fault.

Page	Block
0	3
1	1
4	2
6	0

**REFERENCES:**

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

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)****MCA – II Semester**

L	T	P	C
0	0	3	2

**12DMC10 - OPERATING SYSTEMS LAB**

- 1) Write C programs that make a copy of a file using
  - i) Standard I/O and ii) System calls.
- 2) Write C programs that count the number of blanks in a text file using
  - i) Standard I/O and ii) System calls.
- 3) Write a C Program for Round Robin Scheduling Algorithm
- 4) Write a C Program for SJF Scheduling Algorithm
- 5) Write a C Program for FCFS Scheduling Algorithm
- 6) Write a C Program for FIFO Page Replacement Algorithm
- 7) Write a C Program for LRU Page Replacement Algorithm
- 8) Write a C Program for LFU Page Replacement Algorithm
- 9) Simulate Bankers Algorithm for Dead Lock Avoidance
- 10) Simulate Paging Technique of Memory Management

**REFERENCES:**

1. P.P. Choudhury, *Operating Systems*, PHI Learning Private Ltd.
2. R.Chopra, *Operating Systems*, S.Chand and Company Ltd



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – III Semester

L	T	P	C
4	1	0	4

**12DMC11 - DATABASE MANAGEMENT SYSTEMS**

**Objectives:**

1. To Learn Evolution of database management systems, Entity Relationship Modeling and Design,
2. To Learn Relational Data Model and Relational Algebra, Structured Query Language, Transaction Processing,
3. To Learn about Concurrency Control and Recovery, Client Server and Distributed databases

**Outcomes:**

After Completion of the course the student will be able to

1. Draw System Design using E-R Diagram and define the flow.
2. To improve the functionality of file structure and indexing
3. Tune the concurrency process and able to do transaction Recovery

**UNIT I:**

**Database Systems:** Data vs Information-Introducing the Database and the DBMS-Why Database Design is Important-Files and File Systems-Problems with File System Data Management-Database Systems.

**Data Models:** Data Modeling and Data Models-The Importance of Data Models-Data Model Basic Building Blocks-Business Rules-The Evolution of Data Models-Degree of Data Abstraction.

**UNIT II:**

**Entity Relationship Modeling:** The Entity Relationship Model (ERM)-Developing an ER Diagram-Database Design Challenges:Conflicting Goals-The Extended Entity Relationship Model-Entity Clustering- Entity Integrity: Selecting Primary Keys-Learning Flexible Database Design-Data Modeling Checklist.

**UNIT III:**

**The Relational Database Model:** A Logical View of Data-Keys-Integrity Rules-Relational Set Operators-The Data Dictionary and the System Catalog-Relationships within the Relational Database-Data Redundancy Revisited-Indexes-Codd's Relational Database Rules.

**UNIT IV:**

**Structured Query Language (SQL):** Introduction to SQL-Data Definition Commands-Data Manipulation Commands-SELECT Queries- Advanced Data Definition Commands-Advanced SELECT Queries-Virtual Tables: Creating a View-Joining Database Tables.

**Advanced SQL:** Relational Set Operators-SQL Join Operators-Subqueries and Correlated Queries-SQL Functions-Oracle Sequences-Updatable Views-Procedural SQL-Embedded SQL.

**UNIT V:**

**Normalization of Database Tables:** Database Tables and Normalization-The Need for Normalization-The Normalization Process- Improving the Design-Surrogate Key Considerations-Higher-Level Normal Forms-Normalization and Database Design-Denormalization.

**UNIT VI:**

**Transaction Management and Concurrency Control:** What is a Transaction?-Transaction State-Implementation of atomicity and durability-Concurrency Control-Serializability-Testing for Serializability-Concurrency Control with Locking Methods-Concurrency Control with Time Stamping Methods-Concurrency Control with Optimistic Methods-Database Recovery Management-Validation Based Protocols-Multiple Granularity.

**UNIT VII:**

**Recovery System:** Recovery and Atomicity-Log-Based Recovery-Recovery with Concurrent Transactions-Buffer Management-Failure with loss of nonvolatile storage-Advance Recovery Techniques-Remote Backup Systems.

**UNIT VIII:**

**File Structure and Indexing:** Overview of Physical Storage Media-Magnetic Disks-RAID-Tertiary Storage-Storage Access- File Organization-Organization of Records in Files-Data-Dictionary Storage-Basic Concepts of Indexing-Ordered Indices-B+-Tree Index Files-B-Tree Index Files-Multiple Key Access- Static Hashing-Dynamic Hashing-Comparison of Ordered Indexing and Hashing-Bitmap Indices-Indexed Sequential Access Methods (ISAM).

**TEXT BOOKS :**

1. Peter Rob, A.Ananda Rao and Carlos Coronel, *Database Management Systems*, Cengage Learning.
2. Elmasri, Navate, *Fundamentals of Database Systems*, Pearson Education.

**REFERENCES:**

1. C. J. Date , *Introduction to Database Systems*, Pearson Education.
2. S. Shah and V. Shah, *Oracle for Professionals, The X Team*, SPD.
3. Raghurama Krishnan, Johannes Gehrke, *Database Management Systems*, TATA McGraw Hill 3rd Edition.
4. Silberschatz, Korth, *Database System Concepts*, McGraw hill, V edition.
5. Shah, *Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL*, PHI.
6. M. L. Gillenson, *Fundamentals of Database Management Systems*, Wiley Student Edition.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – III Semester

L	T	P	C
4	1	0	4

**12DMC12 - COMPUTER NETWORKS**

**Objectives:**

1. To define the basic terminology of computer networks, recognize the individual components of the big picture of computer networks.
2. To outline the basic network configurations, cite the reasons for using a network model and how those reasons apply to current network systems.
3. To List the layers of the OSI model and describe the duties of each layer, List the layers of the TCP/IP model and describe the duties of each layer. Understand the transmission methods underlying Ethernet, Token Ring, FDDI, and \*ATM networks Addressing Techniques

**Outcomes:**

After Completion of the course the student will be able to

1. Understand the Network Terminologies and the components used to build networks.
2. Understand Network Models (Topologies) to establish networked systems.
3. Understand the internal architecture, working procedure of OSI Layer and Protocols.

**UNIT I:**

Uses of computer Networks, Network H/w, Network S/W, Reference Models

**Physical Layer:** Guided transmission media – Magnetic media, Twisted Pair, coaxial cable, fiber optics .

**UNIT II:**

**The Data Link layer:** Design issues, Error detection and correction, Sliding window protocols, Data link layer in HDLC

**UNIT III:**

**The Medium Access Sub Layer :** Channel allocation methods, TDM, FDM, ALOHA, Carrier sense Multiple access protocols, Collision free protocols, IEEE standard 802 for LANs- Ethernet, Token Bus, Token ring..

**UNIT IV:**

**Network Layer:** Routing Algorithms, Shortest path, Flooding, Flow based, Distance vector, Link state, Hierarchical, Broadcast Routing. Congestion control algorithms-General principals of congestion control, Congestion prevention polices, choke packets and Load shedding.

**UNIT V:**

**The Transport Protocol:** The Transport Service, Elements of transport protocol , A simple Transport Protocol , Internet Transport Protocols UDP, Internet Transport Protocols TCP, Performance Issues.

**UNIT VI:**

**Application Layer:** DNS-(Domain Name System), Electronic Mail, SMTP, MIME, World Wide Web-HTTP, SNMP.

**UNIT VII:**

**Network Security:** Cryptographic Algorithms, Symmetric \_key Algorithms, Public-Key Algorithms, Digital Signatures, Firewalls-Filter based Firewalls, Proxy based firewalls, limitations.

**UNIT VIII:**

**Communication Security:** Authentications Protocols, E-mail Security, Web security, Social Issues.

**TEXT BOOKS :**

1. Andrew S Tanenbaum, *Computer Networks* -- 4th Edition. Pearson Education
2. Behrouz A. Forouzan , *Data Communications and Networking*. Third Edition TMH.

**REFERENCES:**

1. Michael A.Gallo, William M .Hancock, *Computer Communications and Networking Technologies* – - Thomson Publication
2. S.Keshav *An Engineering Approach to Computer Networks*-,2nd Edition,Pearson Education.
3. W.A.Shay, *Understanding communications and Networks*,3rd Edition, Cengage Learning.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – III Semester

L	T	P	C
4	1	0	4

**12DMC13 - LINUX PROGRAMMING**

**Objectives:**

1. To give Comprehensive overview of Linux operating system along with shell commands and shell scripting
2. Implementation of Linux system program - Process Creation, Signal handling, Inter Process Communication and Process Threads
3. Understanding of Basic Concepts of Socket Programming

**Outcomes:**

After Completion of the course the student will be able to

1. Work in Linux operating system along with shell commands and shell scripting
2. Develop Linux System Program to control multi task & multi user environment
3. Build Client – Server communication using sockets.

**UNIT I:**

Linux Utilities-File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities, sed – scripts, operation, addresses, commands, applications, awk – execution, fields and records, scripts, operation, patterns, actions, functions, using system commands in awk.

**UNIT II:**

Working with the Bourne again shell(bash): Introduction, shell responsibilities, pipes and input Redirection, output redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples, interrupt processing, functions, debugging shell scripts.

**UNIT III:**

Linux Files: File Concept, File System Structure, Inodes, File types, The standard I/O (fopen, fclose, fflush, fseek, fgetc, getc, getchar, fputc, putc, putchar, fgets, gets etc.), formatted I/O, stream errors, kernel support for files, System calls, library functions, file descriptors, low level file access - usage of open, creat, read, write, close, lseek, stat family, umask, dup, dup2, fcntl, file and record locking. file and directory management - chmod, chown, links(soft links & hard links - unlink, link, symlink), mkdir, rmdir, chdir, getcwd, Scanning Directories- opendir, readdir, closedir, rewinddir, seekdir, telldir functions.

**UNIT IV:**

Linux Process – Process concept, Kernel support for process, process attributes, process hierarchy, process states, process composition, process control - process creation, waiting for a process, process termination, zombie process, orphan process, system call interface for process management-fork, vfork, exit, wait, waitpid, exec family, system.

**UNIT V:**

Linux Signals – Introduction to signals, Signal generation and handling, Kernel support for signals, Signal function, unreliable signals, reliable signals, kill, raise, alarm, pause, abort, sleep functions.

**UNIT VI:**

Interprocess Communication : Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, pipes, FIFOs, Introduction to three types of IPC(Linux)-message queues, semaphores and shared memory.

Message Queues- Kernel support for messages, Linux APIs for messages, client/server example.

Semaphores-Kernel support for semaphores, Linux APIs for semaphores, file locking with semaphores.

Shared Memory- Kernel support for shared memory, Linux APIs for shared memory, semaphore and shared memory example.

**UNIT VII:**

Multithreaded Programming – Differences between threads and processes, Thread structure and uses, Threads and Lightweight Processes, POSIX Thread APIs, Creating Threads, Thread Attributes, Thread Synchronization with semaphores and with Mutexes, Example programs.

**UNIT VIII:**

Sockets: Introduction to Linux Sockets, Socket system calls for connection oriented protocol and connectionless protocol, example-client/server programs.

**TEXT BOOKS :**

1. T.Chan, *Unix System Programming using C++*, PHI.
2. Sumitabha Das, *Unix Concepts and Applications*, 4th Edition, TMH, 2006.
3. N.Matthew, R.Stones, Wrox, *Beginning Linux Programming*, 4<sup>th</sup> Edition, Wiley India Edition, rp-2008.

**REFERENCES:**

1. Robert Love, *Linux System Programming*, O'Reilly, SPD, rp-2007.
2. W.R.Stevens, *Unix Network Programming*, PHI.
3. Graham Glass, King Ables, *Unix for programmers and users*, 3<sup>rd</sup> Edition, Pearson Education, 2003.
4. W.R.Stevens, *Advanced Programming in the Unix environment*, 2<sup>nd</sup> Edition, Pearson Education.
5. A.Hoover, *System Programming with C and Unix*, Pearson.
6. Kumar Saurabh, *Unix Programming*, 1<sup>st</sup> Edition, Wiley India pvt Ltd.
7. B.A.Forouzan and R.F.Gilberg, *Unix and Shell programming*, Cengage Learning.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – III Semester

L	T	P	C
4	1	0	4

**12DMC14 - SOFTWARE ENGINEERING**

**Objectives:**

1. To give comprehensive study Software engineering to build e theories, processes, methods
2. To Learn techniques of building high-quality software in cost-effective ways.
3. To discuss the concepts of software products and software processes

**Outcomes:**

After Completion of the course the student will be able to

1. Develop a system in a systematic way by using various Prescriptive Process models like Waterfall and SDLC
2. Develop Systems with low cost and High Performance.
3. Know about different types of software product types and their process.

**UNIT I:**

**Software, Software Engineering, and Process:** The nature of Software, The unique nature of WebApps, Software engineering- A layered technology, The essence and principles of software engineering practice, Generic process model (framework), Process patterns, Process assessment and improvement, CMMI, Software myths.

**UNIT II:**

**Process Models:** Prescriptive process models: The waterfall model, Incremental process models, Evolutionary process models.

The Unified process, Aspect oriented software development, Agile development: Agile process, Extreme programming.

**UNIT III:**

**Software Requirements:** Introduction to functional and non-functional requirements, Requirements engineering activities, Eliciting requirements, Requirements modeling, Requirements validation, Software requirements specification(SRS), Requirements management. Requirements modeling: Structured view: Data modeling (ERD), Flow-Oriented modeling(DFD), Behavioral modeling, Object models, Structured methods. Software Project Estimation: Empirical estimation models.

**UNIT IV:**

**Design Concepts:** Software design quality guidelines and attributes, Design concepts, Design model.

**Software Architecture:** Architecture and its importance, Architectural Styles, Data design, Architectural design.

**Design :** Structured view (Traditional view): Architectural mapping using data flow (Call and return architecture), Interface design, Function based component design.

Object oriented view: OO Architecture, Class hierarchies, Message design, Class based component design.

**UNIT V:**

**Performing User Interface Design:** Golden rules, User interface analysis and design, interface analysis, interface design steps.

**Pattern Based Design:** Design patterns, Pattern based software design, Architectural patterns, Component level design patterns, User interface design patterns.

**UNIT VI:**

**Testing :** Software testing strategies: A strategic approach to software testing, Test strategies (Unit testing and integration testing) for conventional and object oriented software, Validation testing, System testing, The art of debugging.

**UNIT VII:**

**Testing Conventional Applications:** Software testing fundamentals, White-Box testing: Basis path testing, condition (predicate) testing, data flow testing, loop testing, Black box testing: Equivalence partitioning, Boundary value analysis, Graph based testing methods.

**Testing Object Oriented Applications:** OO testing methods, Testing methods applicable at class level, Interclass test case design.

**UNIT VIII:**

**Umbrella Activities :** Risk management, Software quality assurance, Software configuration management, Measurement and metrics: Size oriented metrics, Function oriented metrics, Metrics for software quality, Product metrics: Metrics for the requirements model, Metrics for the design model, Metrics for source code, Metrics for testing, Metrics for maintenance.

**Software Reengineering:** A software reengineering process model, Software reengineering activities.

**TEXT BOOKS :**

1. Roger S. Pressman, *Software Engineering, A practitioner's Approach*- 7th edition. McGrawHill International Edition.
2. Sommerville , *Software Engineering*- 8th edition, Pearson education.

**REFERENCES:**

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



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – III Semester

L	T	P	C
4	1	0	4

**12DMC15 - JAVA PROGRAMMING**

**Objectives:**

1. To Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
2. To Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
3. Have the ability to write a computer program to solve specified problems, able to use the Java SDK environment to create, debug and run simple Java programs.

**Outcomes:**

After Completion of the course the student will be able to

1. Solve and Implement solution for the problem using java basic elements like variables, control structures
2. Handle Object Oriented Concepts effectively in the real time problems.
3. Understand the architecture and working procedure of platform independent language JAVA SDK.

**UNIT I:**

**Java Basics** - History of Java, Java buzzwords, comments, data types, variables, constants, scope and life time of variables, operators, operator hierarchy, expressions, type conversion and casting, enumerated types, control flow-block scope, conditional statements, loops, break and continue statements, simple java program, arrays, input and output, formatting output, Review of OOP concepts, encapsulation, inheritance, polymorphism, classes, objects, constructors, methods, parameter passing, static fields and methods, access control, this reference, overloading methods and constructors, recursion, garbage collection, building strings, exploring string class, Enumerations, autoboxing and unboxing, Generics.

**UNIT II:**

**Inheritance** – Inheritance concept, benefits of inheritance ,Super classes and Sub classes, Member access rules, Inheritance hierarchies, super uses, preventing inheritance: final classes and methods, casting, polymorphism- dynamic binding, method overriding, abstract classes and methods, the Object class and its methods.

**Interfaces** – Interfaces vs. Abstract classes, defining an interface, implementing interfaces, accessing implementations through interface references, extending interface.

**UNIT III:**

**Inner classes** – Uses of inner classes, local inner classes, anonymous inner classes, static inner classes, examples.

**Packages**-Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages.

**UNIT IV:**

**Data structures creation and manipulation in java** – Introduction to Java Collections, Overview of Java Collection frame work, Commonly used Collection classes – ArrayList, LinkedList, HashSet, HashMap, TreeMap, Collection Interfaces – Collection, Set, List, Map, Legacy Collection classes – Vector, Hashtable, Stack, Dictionary(abstract), Enumeration interface, Iteration over Collections – Iterator interface, ListIterator interface. Other Utility classes – StringTokenizer, Formatter, Random, Scanner, Observable, Using java.util.

**UNIT V:**

**Files** – streams- byte streams, character streams, text Input/output, binary input/output, random access file operations, File management using File class, Using java.io.

**Networking in Java** – Introduction, Manipulating URLs, Ex. Client/Server Interaction with Stream Socket Connections, Connectionless Client/Server Interaction with Datagrams, Using java.net.

**UNIT VI:**

**Exception handling** – Dealing with errors, benefits of exception handling, the classification of exceptions- exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catch, throw, throws and finally, rethrowing exceptions, exception specification, built in exceptions, creating own exception sub classes, Guide lines for proper use of exceptions.

**Multithreading** - Differences between multiple processes and multiple threads, thread states, creating threads, interrupting threads, thread priorities, synchronizing threads, interthread communication, thread groups, daemon threads.

**UNIT VII:**

**GUI Programming with Java** - The AWT class hierarchy, Introduction to Swing, Swing vs. AWT, MVC architecture, Hierarchy for Swing components, Containers – Top-level containers – JFrame, JApplet, JWindow, JDialog, Light weight containers – JPanel, A simple swing application, Overview of several swing components- JButton, JToggleButton, JCheckBox, JRadioButton, JLabel, JTextField, JTextArea, JList, JComboBox, JMenu, Java's Graphics capabilities – Introduction, Graphics contexts and Graphics objects, color control, Font control, Drawing lines, rectangles and ovals, Drawing arcs, Layout management - Layout manager types – border, grid, flow, box.

**UNIT VIII:**

**Event Handling** - Events, Event sources, Event classes, Event Listeners, Relationship between Event sources and Listeners, Delegation event model, Semantic and Low-level events, Examples: handling a button click, handling mouse and keyboard events, Adapter classes.

**Applets** – Inheritance hierarchy for applets, differences between applets and applications, life cycle of an applet - Four methods of an applet, Developing applets and testing, passing parameters to applets, applet security issues.

**TEXT BOOKS :**

1. Herbert Schildt, *Java: the complete reference*, 7th edition, TMH.
2. P.J.Deitel and H.M.Deitel, *Java for Programmers*, Pearson education
3. P.J.Deitel and H.M.Deitel, *Java: How to Program*, 8th edition, PHI.

**REFERENCES:**

1. Cay S.Horstmann and Gary Cornell, *Core Java, Volume 1-Fundamentals*, eighth edition, Pearson education.
2. D.S.Malik, *Java Programming*, Cengage Learning.
3. B.Eswara Reddy, T.V.Suresh Kumar, P.Raghavan, *Object Oriented Programming with Java*, Pearson-Sanguine.
4. R.A. Johnson, *An introduction to Java programming and object oriented application development*, - Cengage Learning.
5. K.Somasundaram, *Advanced Programming in Java2*, Jaico Publishing House.
6. T.Gaddis, *Starting out with Java*, dreamtech India Pvt. Ltd.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – III Semester

L	T	P	C
0	0	3	2

**12DMC16 - DATABASE MANAGEMENT SYSTEMS LAB**

**List of Sample Problems/Experiments**

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints. Example:- Select the roll number and name of the student who secured fourth rank in the class.
3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4. 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)
5. 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.
6. Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE-APPLICATION ERROR.
8. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
9. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
10. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
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, A.Ananda Rao and Carlos Coronel, *Database Management Systems*, Cengage Learning.
2. Benjamin Rosenzweig, Elena Silvestrova, *ORACLE PL/SQL by example*. Pearson Education 3<sup>rd</sup> Edition
3. Dr.P.S. Deshpande, *SQL & PL/SQL for Oracle 10g*, Black Book
4. Rick F.Vander Lans, *Introduction to SQL*, Pearson Education.
5. Steven Feuerstein, *Oracle PL/SQL Programming*, SPD.
6. N.Gehani, *The Database Book*, Universities Press.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – III Semester

L	T	P	C
0	0	3	2

**12DMC17 - JAVA PROGRAMMING LAB**

1. Write a Java program that 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.
2. The Fibonacci sequence is defined by the following rule:  
The first two values in the sequence are 1 and 1.  
Every subsequent value is the sum of the two values preceding it.  
Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.
3. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
4. Write a Java program to multiply two given matrices.
5. Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)
6. Write a Java program to find both the largest and smallest number in a list of integers.
7. Write a Java program to illustrate method overloading.
8. Write a Java program that implements the Sieve of Eratosthenes to find prime numbers.
9. Write a Java program to sort a list of names in ascending order.
10. Write a Java program to implement the matrix ADT using a class. The operations supported by this ADT are:
  - a) Reading a matrix.
  - b) Printing a matrix.
  - c) Addition of matrices.
  - d) Subtraction of matrices.
  - e) Multiplication of matrices.
11. Write a Java Program to solve Tower's of Hanoi problem .
12. Write a Java Program that uses a recursive function to compute ncr. (Note: n and r values are given.)
13. Write a Java program to perform the following operations:
  - a) Concatenation of two strings.
  - b) Comparison of two strings.
14. Implement the complex number ADT in Java using a class. The complex ADT is used to represent complex numbers of the form  $c=a+ib$ , where a and b are real numbers. The operations supported by this ADT are:
  - a) Reading a complex number.
  - b) Writing a complex number.
  - c) Addition of Complex numbers.
  - d) Subtraction of complex numbers.
  - e) Multiplication of complex numbers.
  - f) Division of complex numbers.
15. Write a Java program that makes frequency count of letters in a given text.
16. Write a Java program that uses functions to perform the following operations :
  - a) Inserting a sub-string in to the given main string from a given position.
  - b) Deleting n characters from a given position in a given string.

17. Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.
18. Write a Java program to make frequency count of words in a given text.
19. Write a Java program that reads a file name from the user, 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.
20. Write a Java program that reads a file and displays the file on the screen, with a line number before each line.
21. Write a Java program that displays the number of characters, lines and words in a text file.
22. Write a Java program to change a specific character in a file.  
Note: Filename, number of the byte in the file to be changed and the new character are specified on the command line.
23. Write a Java program that:
  - i) Implements stack ADT.
  - ii) Converts infix expression into Postfix form
  - iii) Evaluates the postfix expression.
24.
  - a) Develop an applet in Java that displays a simple message.
  - b) Develop an applet in Java 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.
25. 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.
26. Write a Java program for handling mouse events.
27. Write a Java program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.
28. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.
29. Write a Java 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.
30. 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)
31. 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.
32. Write a Java program that allows the user to draw lines, rectangles and ovals.
33. Write a Java program to create an abstract class named Shape that contains an empty method named numberOfSides ( ). Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method numberOfSides ( ) that shows the number of sides in the given geometrical figures.

34. Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Jtable component.
35. Write a Java program that illustrates the following
  - a) Creation of simple package.
  - b) Accessing a package.
  - c) Implementing interfaces.
36. Write a Java program that illustrates the following
  - a) Handling predefined exceptions
  - b) Handling user defined exceptions
37. Write a Java program that use both recursive and non-recursive functions for implementing the following searching methods:
  - a) Linear search
  - b) Binary search
38. Write a Java programs to implement the following using arrays and linked lists
  - a) List ADT
39. Write a Java program to implement the following using an array.
  - a) Queue ADT
40. Write a Java program for handling Key events.
41. Write a Java program that uses both stack and queue to test whether the given string is a palindrome.
42. Write Java programs to implement the following using a singly linked list.
  - a) Stack ADT
  - b) Queue ADT
43. Write Java programs for implementing the following sorting methods:
  - a) Bubble sort
  - b) Selection sort
  - c) Insertion sort
  - d) Quick sort

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – III Semester

L	T	P	C
0	0	3	2

**12DMC18 - LINUX LAB**

1. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
2. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
3. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
4. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.
5. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
6. Write a shell script to list all of the directory files in a directory.
7. Write a shell script to find factorial of a given integer.
8. Write an awk script to count the number of lines in a file that do not contain vowels.
9. Write an awk script to find the number of characters, words and lines in a file.
10. Write a c program that makes a copy of a file using standard I/O and system calls.
11. Implement in C the following Unix commands using System calls  
A . cat            B. ls            C. mv
12. Write a program that takes one or more file/directory names as command line input and reports the following information on the file.  
A. File type.        B. Number of links.  
C. Time of last access.    D. Read, Write and Execute permissions.
13. Write a C program to emulate the Unix ls -l command.
14. Write a C program to list for every file in a directory, its inode number and file name.
15. Write a C program that demonstrates redirection of standard output to a file.Ex: ls > f1.
16. Write a C program to create a child process and allow the parent to display "parent" and the child to display "child" on the screen.
17. Write a C program to create a Zombie process.
18. Write a C program that illustrates how an orphan is created.
19. Write a C program that illustrates how to execute two commands concurrently with a command pipe. Ex:- ls -l | sort
20. Write C programs that illustrate communication between two unrelated processes using named pipe.
21. Write a C program (sender.c) to create a message queue with read and write permissions to write 3 messages to it with different priority numbers.
22. Write a C program (receiver.c) that receives the messages (from the above message queue as specified in (21)) and displays them.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – IV Semester

L	T	P	C
4	1	0	4

**12DMC19 - OBJECT ORIENTED ANALYSIS AND DESIGN (USING UML)**

**Objectives:**

1. To Use object-oriented technologies, Perform object-oriented analysis and design, Follow a software development process using an Object Oriented software project.
2. Use the widely adopted graphical modeling language - the Unified Modeling Language (UML), Manage complexity of artifacts; describe the problem and proposed solution.

**Outcomes:**

After Completion of the course the student will be able to

1. Develop a system using OOAD concepts , giving solution in universal graphical model.
2. Documenting user requirements using the UML notation

**UNIT I:**

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

**UNIT II:**

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.  
Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

**UNIT III:**

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams

**UNIT IV:**

Basic Behavioral Modeling-I: Interactions, Interaction diagrams.

**UNIT V:**

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

**UNIT VI:**

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

**UNIT VII:**

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.

**UNIT VIII:**

Patterns and Frameworks, Artifact Diagrams. Case Study: The Unified Library application



**TEXT BOOKS :**

1. Grady Booch, James Rumbaugh, Ivar Jacobson : *The Unified Modeling Language User Guide*, Pearson Education 2nd Edition
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: *UML 2 Toolkit*, WILEY-Dreamtech India Pvt. Ltd.

**REFERENCES:**

1. Meilir Page-Jones: *Fundamentals of Object Oriented Design in UML*, Pearson Education.
2. Pascal Roques: *Modeling Software Systems Using UML2*, WILEY-Dreamtech India Pvt. Ltd.
3. Atul Kahate: *Object Oriented Analysis & Design*, The McGraw-Hill Companies.
4. Mark Priestley: *Practical Object-Oriented Design with UML*, TATA McGrawHill.
5. Craig Larman, *Applying UML and Patterns: An introduction to Object - Oriented Analysis and Design and Unified Process*, Pearson Education.
6. John W. Satzinger, Robert B Jackson and Stephen D Burd, *Object-Oriented Analysis and Design with the Unified Process*, Cengage Learning.
7. R.C.Lee, and W.M.Tepfenhart, *UML and C++*, PHI.
8. B.Dathan, S.Ramnath, *Object Oriented Analysis, Design and Implementation*, Universities Press.
9. K.Barclay, J.Savage, Elsevier, *OODesign with UML and Java*.
10. Russ Miles and Kim Hamilton, *Learning UML 2.0*, O'Reilly, SPD.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – IV Semester

L	T	P	C
4	1	0	4

**12DMC20 - ADVANCED WEB TECHNOLOGIES**

**Objectives:**

1. Demonstrate techniques for improving the accessibility of an HTML document
2. Give the distinguishing characteristic of scripting languages
3. Describe how a given web server responds to an HTTP request for a dynamic resource

**Outcomes:**

After Completion of the course the student will be able to

1. Gain the innovative ideas to develop a Static Web Documents
2. Develop a dynamic web Documents using JSP and Servlet

**UNIT I:**

**HTML Common tags-** List, Tables, images, forms, Frames; Cascading Style sheets

**UNIT II:**

**Introduction to Java Scripts,** Objects in Java Script, Dynamic HTML with Java Script

**UNIT III:**

**XML:** Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

**UNIT IV:**

Review of Applets, Class, Event Handling, AWT Programming

**Introduction to Swing:**

JApplet, Handling Swing Controls like Icons – Labels – Buttons – Text Boxes – Combo – Boxes – Tabbed Pains – Scroll Pains – Trees – Tables Differences between AWT Controls & Swing Controls Developing a Home page using Applet & Swing

**UNIT V:**

**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 VI:**

**Web Servers and Servlets:** Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servelet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues,

**UNIT VII:**

**JSP Application Development:** Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations

**UNIT VIII:**

**Database Access :** 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, Introduction to struts framework..

**TEXT BOOKS :**

1. Dietel and Nieto, *Internet and World Wide Web – How to program* Pearson Education Asia. (Chapters: 3, 4, 8, 9, 10, 11, 12 – 18)
2. Patrick Naughton and Herbert Schildt, *The complete Reference Java 2*, Third Edition (Chapters: 19, 20, 21, 22, 25, 27)
3. Hans Bergstan, *Java Server Pages*. (Chapters: 1 – 9)

**REFERENCES:**

1. Murach's *beginning JAVA JDK 5*, Murach, SPD
2. Wang, *An Introduction to web Design and Programming* –Thomson
3. Knuckles, *Web Applications Technologies Concepts*- John Wiley
4. Sebesta, *Programming world wide web*- Pearson
5. NIIT, *Building Web Applications*- PHI
6. Bai/Ekedaw , *Web Warrior Guide to Web Programmimg*-Thomas
7. Jon Duckett , *Beginning Web Programming*- WROX.
8. Pekowsky, *Java Server Pages*, Pearson.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – IV Semester

L	T	P	C
4	1	0	4

**12DMC21 - MULTIMEDIA AND APPLICATION DEVELOPMENT**

**Objectives:**

1. To understand the fundamental ideas of graphical components Text, image, video and audio
2. To learn animation work in Flash and action script for animation
3. To understand transmission of audio and video in networks

**Outcomes:**

After Completion of the course the student will be able to

1. Handle graphical components like text, image, videos and audio in a effective way in an animation
2. build an animated user interactive Flash application
3. handle streaming videos and audio effectively in networked environment

**UNIT I:**

Fundamental concepts in Text and Image: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color in image and video: color science, color models in images, color models in video.

**UNIT II:**

Fundamental concepts in video and digital audio: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

**UNIT III:**

Action Script I: ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Classes, Authoring an ActionScript Class

**UNIT IV:**

Action Script II: Inheritance, Authoring an ActionScript 2.0 Subclass, Interfaces, Packages, Exceptions

**UNIT V:**

Application Development: An OOP Application Frame work, Using Components with ActionScript MovieClip Subclasses.

**UNIT VI:**

Multimedia data compression: Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossy compression algorithm: Quantization, Transform Coding, Wavelet-Based Coding, Embedded Zerotree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).

**UNIT VII:**

Basic Video Compression Techniques: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.

**UNIT VIII:**

Multimedia Networks: Basics of Multimedia Networks, Multimedia Network Communications and Applications : Quality of Multimedia Data Transmission, Multimedia over IP

**TEXT BOOKS :**

1. Ze-Nian Li and Mark S. Drew , *Fudamentals of Multimedia* PHI/Pearson Education
2. Colin Moock, *Essentials ActionScript 2.0*, SPD O,REILLY.

**REFERENCES:**

1. Nigel chapman and jenny chapman, *Digital Multimedia*, Wiley-Dreamtech
2. Unleashed *Macromedia Flash MX Professional 2004*, Pearson.
3. Steve Heath, Elsevier, *Multimedia and communications Technology*, (Focal Press)
4. Steinmetz, Nahrstedt, *Multimedia Applications*, Springer.
5. Weixel , *Multimedia Basics* Thomson
6. David Hilman , *Multimedia Technology and Applications*, Galgotia

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – IV Semester

L	T	P	C
4	1	0	4

**12DMC22 - SCRIPTING LANGUAGES  
(ELECTIVE-I)**

**Objectives:**

1. To understand the fundamentals of open source PHP Scripting
2. To understand the basic ideas of open source MYSQL database
3. To understand the fundamentals of python

**Outcomes:**

After Completion of the course the student will be able to

1. Built a dynamic website using php
2. Build a database programming with php and mysql
3. Build a application using python

**UNIT I:**

**Introducing PHP:** History, Unique Features, Basic Development Concepts, Creating your First PHP Script, Mixing PHP with HTML

**Using Variables and Operators:** Storing Data in Variables, Understanding PHP's Data Types, Setting and Checking Variable Data Types, Using Constants, Manipulating Variables with Operators

**UNIT II:**

**Controlling Programming Flow:** Writing Simple Conditional Statements, Writing More Complex Conditional Statements, Repeating Actions with Loops, Writing with String and Numeric Functions.

**Working with Arrays:** Storing data in Arrays, Processing Arrays with Loops and Iterators, Using Arrays with Forms, Working with Array Functions, Working with Dates and Times

**UNIT III:**

**Using Functions and Classes:** Creating User Defined Functions, Creating Classes, Using Advanced OOP Concepts

**Working with Files and Directories:** Reading Files, Writing Files, Processing Directories, Performing Other File and Directory Operations.

**UNIT IV:**

**Using MYSQL to Create Databases:** Working with MYSQL, Creating a Database, Creating and Modifying a Table, Creating More Powerful Queries

**UNIT V:**

**Connecting to Databases within PHP:** Connecting to the database, Retrieving Data in an HTML Table, Viewing and Selecting Records

**UNIT VI:**

**Python:** Introduction to Python, Setting Up Python on Windows, Introducing IDLE, Using Quotes with Strings, Using Escape Sequence with Strings, Concatenating and Repeating Strings, Working with Numbers, Understanding Variables, Getting User Input, Using String Methods.

**UNIT VII:**

**Conditional Statements and Looping Structures:** If Statements, While Loop Do While Loop, Infinite Loops, For Loops, Strings and Tuples

**UNIT VIII:**

**Functions:** Creating Functions, Using Parameters and Return Values, Using Keywords and Constants, Built-in Functions.

**TEXT BOOKS :**

1. Vikram Vaswani, *PHP: A BEGINNER'S GUIDE (Beginner's Guides (M...(Paperback)*
2. Mike Dawson, *Python Programming for the Absolute Beginner(Paperback)*

**REFERENCES :**

1. Luke Welling and Laura Thomson, "PHP and MySQL Web Development" – 4<sup>TH</sup> Edition  
Pearson Education inc.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – IV Semester

L	T	P	C
4	1	0	4

**12DMC23 - HUMAN COMPUTER INTERACTION  
(ELECTIVE-I)**

**Objectives:**

1. To understand the importance of graphical user interface
2. To learn the Screen Designing and windows
3. To learn the new software Tools and Interaction Devices

**Outcomes:**

*After Completion of the course the student will be able to*

1. Gain the essential information regarding human computer interaction
2. Improve the creativity and build a new Interactive Techniques

**UNIT I:**

Introduction: Importance of user Interface – definition, importance of good design. Benefits of good design. A brief history of Screen design.

**UNIT II:**

The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

**UNIT III:**

Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.

**UNIT IV:**

Screen Designing:- Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design.

**UNIT V:**

Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.

**UNIT VI:**

Components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors.

**UNIT VII:**

Software tools – Specification methods, interface – Building Tools.

**UNIT VIII:**

Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.



**TEXT BOOKS :**

1. Wilbert O Galitz, *The essential guide to user interface design*, Wiley DreamTech.
2. Ben Shneidermann , *Designing the user interface*, 3rd Edition Pearson Education Asia

**REFERENCES:**

1. Alan Dix, Janet Finckay, Greg Goryd, Abowd, Russell Bealg, *Human - Computer Interaction*. Pearson Education
2. Prece, Rogers, Sharps, *Interaction Design* Wiley Dreamtech.
3. Soren Lauesen , *User Interface Design*, Pearson Education.
4. D.R.Olsen, *Human -Computer Interaction*, Cengage Learning.
5. Smith - Atakan, *Human -Computer Interaction*, Cengage Learning.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – IV Semester

L	T	P	C
4	1	0	4

**12DMB02 - MANAGERIAL ECONOMICS  
(ELECTIVE-I)**

**Objectives:**

1. To understand the relevance of economics in business management.
2. To understand the functional areas of management such as Marketing, Production and Costing from a broader perspective.

**Outcomes:**

After completion of the course the student will be able to

1. Apply the economic principles for any type of business management.
2. Use the various functional areas of management for the prospects of a business organization.

**UNIT I**

**INTRODUCTION TO MANAGERIAL ECONOMICS:** Definition - Nature and Scope - Relationship with other areas: Economics, Production Management, Marketing, Finance and Personnel, Operations Research - The Role of Managerial Economist.

**UNIT II**

**BASIC ECONOMIC PRINCIPLES:** The concept of Opportunity Cost - Discounting principle - Time perspective - Incremental Concept – Marginalism - Equi – Marginalism – Scarcity - Risk and Uncertainty. **OBJECTIVES OF THE FIRM:** Profit Maximisation - Sales Maximisation and other objectives. **STRUCTURE OF THE FIRM:** Characteristics and types.

**UNIT III**

**UTILITY ANALYSIS:** Meaning and measurement of utility – Approaches to utility analysis. **CARDINAL UTILITY ANALYSIS:** Law of diminishing marginal utility – Law of equi - Marginal utility – Limitations of cardinal utility analysis. **ORDINAL UTILITY ANALYSIS:** Indifference curve approach – What is indifference curve – Marginal rate of substitution – Properties of indifference curve – Budget line or iso- Expenditure line – Consumer equilibrium.

**UNIT IV**

**THEORY OF DEMAND:** Meaning of Demand – Determinants of Demand – Demand Function – Law of Demand and its Exceptions – Types of Demand. **ELASTICITY OF DEMAND:** Definition – Types - Measurement and Significance of Elasticity of Demand. **DEMAND FORECASTING:** Need for Demand Forecasting – Forecasting Techniques – Demand Forecasting for new products.

**UNIT V**

**SUPPLY AND PRODUCTION ANALYSIS: SUPPLY ANALYSIS:** Supply function - The Law of Supply - Elasticity of Supply. **PRODUCTION ANALYSIS:** Production function - Marginal Rate of Technical Substitution - Isoquants and Isocosts – Least cost combination of inputs – Production function with one/two variables - Cobb-Douglas Production Function - Returns to Scale and Returns to Factors - Economies of scale.

**UNIT VI**

**COST ANALYSIS:** Cost Concepts - Determinants Of Cost - Cost-Output Relationship in the Short Run and long Run - Short Run vs. Long Run Costs - Average Cost Curves.

### UNIT VII

**MARKET STRUCTURE AND PRICING PRACTICES:** Features and Types of different Competitive Situations – Price-Output Determination in Perfect Competition – Monopoly - Monopolistic Competition and Oligopoly both in the long run and short run. **PRICING PHILOSOPHY** – Pricing methods in Practice: Price Discrimination - Product line Pricing.

**PRICING STRATEGIES:** Skimming Pricing - Penetration pricing - Loss Leader Pricing - Pricing of multiple Products.

### UNIT VIII

**PROFIT MANAGEMENT:** Meaning and Nature of Profit – Role of Profit. **BREAK - EVEN ANALYSIS:** Determination of Break - Even Point (Simple Problems) – Assumptions – Uses - Managerial Significance and limitations of Break - Even Analysis.

### TEXT BOOKS:

1. Dean. Joel, "*Managerial Economics*", PHI.
2. G S Gupta, "*Managerial Economics*", Tata McGraw Hill.P.L.Mehta
3. Mehta, P.L., *Managerial Economics - Analysis, Problems, Cases*, Sultan Chand and Sons, New Delhi, 2001

### REFERENCES:

1. Hirschey, *Economics for Managers*, Thomson, 2007.
2. Gupta, *Managerial Economics*, TMH 2009.
3. Keat, *Managerial Economics: Economic Tools for Today's Decision Makers*, Pearson Education, 2007.
4. Thomas Maurice, *Managerial Economics*, Concepts and applications, TMH 2006.
5. Froeb, *Managerial Economics—A Problem Solving Approach*, Thomson, 2007.
6. James L.Pappas and Engene F.Brigham, *Managerial Economics*, Pearson Education, New Delhi, 2006.
7. Suma Damodaran, *Managerial Economics*, Oxford, 2007.
8. M.E. ThukaramRao, *Management accounting*, New Age International publishers, New Delhi.
9. S P Jain & K L Narang, *Cost Accounting Principles and Practices*, 17th Revised Edition Kalyani Publishers.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – IV Semester

L	T	P	C
4	1	0	4

**12DMC24 - ARTIFICIAL INTELLIGENCE  
(ELECTIVE-II)**

**Objectives:**

1. To give the basic knowledge on representation, problem solving, and learning methods of Artificial Intelligence
2. To Assess the applicability, strengths, and weaknesses of the basic knowledge representation, problem solving, and learning methods in solving particular engineering problems
3. To Develop intelligent systems by assembling solutions to concrete computational problems, understand the role of knowledge representation, problem solving, and learning in intelligent-system engineering

**Outcomes:**

After Completion of the course the student will be able to

1. Define Knowledge representation using production systems rules and relational calculus
2. Develop Intelligent-Systems

**UNIT I:**

Introduction: AI-Acting and Thinking humanly, rationally, Searching: Searching for solutions, Uniformed Search Strategies, Informed Search Strategies, Heuristic Functions.

**UNIT II:**

Local Search Algorithms and Optimization Problems: Hill-climbing, Simulated annealing, Local beam, Genetic algorithms, Constraint Satisfaction Problems, Backtracking Search for CSPs.

**UNIT III:**

Adversial Search: Games, Optimal Decision in Games, Alpha-Beta Pruning, Evaluation Functions, Cutting off search, Games that include an Element of chance, Game programs. Knowledge and reasoning-I: Logical Agents.

**UNIT IV:**

Knowledge and reasoning-II: First-Order Logic: Syntax and Semantics, Using First Order Logic, Knowledge Engineering, Inference in First-Order Logic: Propositional vs. First-Order Inference, Unification and Lifting, Resolution, Forward and Backward Chaining.

**UNIT V:**

Planning: Classical planning problem, Language of planning problems, Expressiveness and extension, planning with state-space search, Partial-Order planning, Planning Graphs, Planning with Propositional Logic.

**UNIT VI:**

Learning: Forms of learning, Introduction learning, Learning Decision Tree, Statistical learning methods, learning with complete data, learning with hidden variables-EM Algorithms, Instance based learning, Neural networks.

**UNIT VII:**

Expert Systems: Introduction, Advantages, Characteristics, General concepts, Applications and Domains, Languages, Shells and Tools, Elements, Production Systems, Procedural and Nonprocedural Paradigms, Artificial Neural Systems, Connectionist Expert Systems and Inductive Learning.

**UNIT VIII:**

Design of Expert Systems: Selecting the Appropriate Problem, Stages in the Development of an Expert System, The Expert System Life Cycle.

Detailed life cycle model, Expert system design examples-Certainty factors, Decision trees, backward chaining.

**TEXT BOOKS :**

1. Russell, Norvig-*"Artificial Intelligence-A Modern Approach"*, 2e, 2004, PEA
2. Giarratano, Riley-*"Expert Systems-Principles and Programming"*, 3e, 2003, Thomson

**REFERENCES:**

1. George F Luger - *"Artificial Intelligence-Structures and strategies for Complex problem Solving"*, 4e, 2004, PEA.
2. Rich, Knight, Nair - *"Artificial Intelligence"*, 3e, TMH.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)****MCA – IV Semester**

L	T	P	C
4	1	0	4

**12DMC25 - CONTENT MANAGEMENT SYSTEMS  
(ELECTIVE-II)****Objectives:**

1. To Learn Basic concepts and techniques in content Management in Dynamic Webpage
2. To Learn Basic Knowledge to build a web site using CMS JOOMLA
3. Templates Usage and Design in CMS

**Outcomes:**

After Completion of the course the student will be able to

1. Design and Develop a Dynamic Web Site.
2. Driving Traffic to Your Web Site with Search Engine Optimization

**UNIT I:**

**Content:** Defining Data, Information and Content, Content has Format, Content has Structure, Functionality Is Content- Too, What is Content Really.

**Content Management:** Understanding Content Management, Introducing the Major Parts of a CMS, Knowing When you Need a CMS, Component Management vs Composition Management., Roots of CM, Branches of CM

**UNIT II:**

**Doing Content Management Projects:** Doing CM Projects Simply, Staffing a CMS, Working within the Organization, Getting Ready for a CMS, Securing a Project Mandate, Doing Requirement Gathering, Doing Logical Design, Selecting Hardware and Software, Implementing the System, Rolling Out the System.

**UNIT III:**

**Designing a CMS:** Designing a CMS Simply, The Wheel of Content Management, Working with Metadata, Cataloguing Audiences, Designing Publications, Designing Content Types.

**UNIT IV:**

Accounting for Authors, Accounting for Acquisition Sources, Designing Content Access Structures, Designing Templates, Designing Personalization, Designing Workflow and Staffing Models.

**UNIT V:**

**Building a CMS:** Building a CMS Simply, Content Markup Languages, XML and Content Management, Processing Content, Building Collection Systems, Building Management Systems, Building Publishing Systems

**UNIT VI:**

**Getting Started with Joomla:** Essential Joomla, Getting and Installing Joomla, Mastering the Front Page.

**Joomla at Work:** Adding Webpages to your site, Building Navigation into your site with Menus, Mastering Web Page Creation.

**UNIT VII:**

**Working with Joomla Modules & Templates:** Getting Started with Modules, More Modules, Who, What and Where.

**UNIT VIII:**

**Joomla in the Real World:** Laying Out Your Web Pages with Joomla Templates, Managing Your Web Site's Users, Driving Traffic to Your Web Site with Search,Engine Optimization, Extending Joomla

**TEXT BOOKS :**

1. Bob Boiko, *Content Management Bible(Paperback)* Wiley Publishing, Inc.
2. Seamus Bellamy, *Joomla! For Dummies- 2<sup>nd</sup>* edition Wiley Publishing, Inc.

**REFERENCES :**

1. Sofia Hauschildt , "CMS Made Simple 1.6: Beginners Guide",- Packet Publishing

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – IV Semester

L	T	P	C
4	1	0	4

**12DCE01 - GIS  
(ELECTIVE-II)**

**Objectives:**

1. To Communicate effectively in oral, written and graphic modes
2. To Apply Mathematical and Scientific Principles to Spatial Analysis
3. To aid in protection, preservation and interpretation of natural resources

**Outcomes:**

After Completion of the course the student will be able to

1. Ability to identify geospatial problems and the requisite methods
2. Gain the knowledge of remote sensing

**UNIT I:**

**Principles of Geographical Information Systems:** Theory of GIS supported by extensive practical exercises, Geographic information and spatial data types, Hardware and software; for GIS; Steps of spatial data handling, Database management systems, Spatial referencing, Data quality, Measures of location errors on maps, Satellitebased positioning, Spatial data input, Data preparation, Point data transformation, Analytical GIS capabilities; Retrieval and classification Overlay functions Neighborhood operations; Network analysis; error propagation , Data visualization.

**UNIT II:**

**Cartography :** Cartography, Introduction to Cartography, Classification of maps, Types of data, Visual variables, Generalization, Symbolization, Map design, Map Layout, Diagrams Map Projection, Topographic mapping, and Production of large-scale maps and photo.

**UNIT III:**

**GIS Analysis, Planning & implementation:** Network analysis, Digital terrain modeling & analysis, Grid cell GIS modeling & analysis, GIS plan, Components of GIS plan, Phases: Planning, Analysis, Implementation, Successful Implementation of GIS, Management support, Leadership & vision, Data conversion & maintenance of Hardware & software, User training, Data communication, Software customization, User support, Funding.

**UNIT IV:**

**Maintenance & Management of GIS Database:** Centralized GIS database, Distributed GIS database, Master & transaction GIS databases, Data maintenance issues, Financial & legal aspects of GIS: GIS costs, Ongoing costs, Savings, Additional benefits, GIS model for financial justification, Laws for access, pricing, privacy, liability, copyright, practice etc. Pitfalls of GIS: Failures, Outstanding benefits, Experimentation, Undefined goals, Lack of long term planning & management support, Computerizing existing problems, User involvement, Lack of user training and R & D support, Budget overrun / underestimation etc.

**UNIT V:**

**Advanced GIS:** Geo-information system and analysis, Raster data base design, GIS Vector based data structure/design, Data base creation for urban area analysis, Urban information system for resources and integrated developing planning, Urban modeling, GIS application case studies, Grid cell Data Processing, Principle of grid cell date processing, Rasterizing point, line and polygons, Selection of grid cell size and effect on data quality.



**UNIT VI:**

**Remote Sensing:** Fundamentals of RS ,Electromagnetic energy and Remote sensing, Sensors, platforms and RS data acquisition systems, Multispectral, Hyperspectral and Thermal sensors Radiometric aspects of remote sensing data, Geometric aspects of remote sensing data, Image enhancement and visualization, Image interpretation and classification, Microwave thermal remote sensing, Radar & Laser altimetry

**UNIT VII:**

**Remote Sensing Application:** Agriculture and Soils, Forestry, Geosciences, Geology and water resources, Land use application, Environmental analysis and managements, Marine Science, Human Settlement analysis

**UNIT VIII:**

**Case study:** Land records, Utility management, Oil and Gas, Global change

**TEXT BOOKS :**

1. G.B. Korte, "*The GIS Handbook*"
2. Chang, Kang, Tsung (2004), "*Programming Arc Objects with VBA CRC Press*", Boca Raton Florida

**REFERENCES:**

1. Michael N. Demers, "Fundamentals of Geographical Information Systems" - Wiley 4<sup>th</sup> edition

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)****MCA – IV Semester**

L	T	P	C
0	0	3	2

**12DMC26 – UML LAB**

1. The student should take up the case study of Unified Library application which is mentioned in the theory, and Model it in different views i.e Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.
2. Student has to take up another case study of his/her own interest and do the same what ever mentioned in first problem. Some of the ideas regarding case studies are given in reference books which were mentioned in theory syllabus can be referred for some idea.

**TEXTBOOKS:**

1. P.Nageswara Rao, *Software Testing Concepts and Tools*, dreamtech press.
2. Dr.K.V.K.K.Prasad, *Software Testing Tools*, dreamtech Press.
3. S.Subashini, N.Satheesh kumar, *Software Testing with Visual Studio Team System 2008*, SPD.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)****MCA – IV Semester**

L	T	P	C
0	0	3	2

**12DMC27 – MULTIMEDIA AND APPLICATION DEVELOPMENT LAB**

1. Assigning Actions to an Object, and a Button
2. Creating Loops
3. Generation Random Numbers
4. Creating a Function, Calling a Function
5. Detecting the Player Version
6. Detecting the Operating System
7. Checking the System language
8. Detecting Display Settings
9. Tinting a Movie Clip's Color
10. Controlling a Movie Clip's Color with Sliders
11. Drawing a Circle
12. Drawing a Rectangle
13. Filling a Shape with a Gradient
14. Scripting Masks
15. Converting Angle Measurements
16. Calculating the Distance Between the Two Points
17. Formatting Currency Amount
18. Converting Between Units of Measurement
19. Determining Points Along a Circle
20. Sorting or Reversing an Array
21. Implementing a Custom Sort
22. Creating a Text Field
23. Making a Password Input field

All the above programs are to be done in Flash MX 2004.

**Reference:**

1. Joey Lott, *Action Script Cookbook*, SPD-Oreilly.
2. Doug Sahlin, *Flash MX Action Script for designers*, Dreamtech Wiley.
3. David Vogeeler and Matthew Pizzi , *Flash MX Professional 2004 Unleashed*, Pearson Education.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

**MCA – IV Semester**

L	T	P	C
0	0	3	2

**12DMC28 – ADVANCED WEB TECHNOLOGIES LAB**

1. Develop static pages (using only HTML ) Develop static pages (using only HTML) of an online Book store. The pages should resemble:
  - Home page
  - Registration and user Login
  - User profile page
  - Books catalog
  - Shopping cart
  - Payment By credit card
  - Order confirmation.
2. Validate the Registration, user login user profile and payment by credit card pages using JavaScript
3. Create and save an XML document at the server which contains 10 user information. Write a program Which takes a user Id as an input and returns the user details by taking the user information from XML document
4. Create a Web Page using Java AWT Controls
5. Create a Web Page using Java Swing Controls
6. Install TOMCAT web server. Create a web page using javax.servlet.\* package.
7. Create a dynamic web page using page centric approach using jsp.
8. Create a dynamic web page using jsp and insert the data in the database.
9. Extract the data in the database using jsp.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
4	1	0	4

**12DMC29 - MOBILE APPLICATION DEVELOPMENT**

**Objectives:**

1. To design , implement and debug/test applications for mobile devices
2. Using Android Data and Storage APIs
3. To exploit the many capabilities of modern mobile devices to produce creative solution to everyday challenges

**Outcomes:**

*After Completion of the course the student will be able to*

1. Develop Mobile Applications using Android
2. Implement Mobile Networking and Accessing the Internet

**UNIT I:**

**Introduction to Android:** History of Mobile Software Development, Open Handset Alliance, The Android Platform, Exploring Android SDK, Building First Android application, Android terminologies, Application Context, Application Tasks with Activities, Using Intents

**UNIT II:**

**Android Manifest File and Application Resources:** Configuring Android Manifest File, Managing Application's Identity, Enforcing Application System Requirements, Registering Activities and other Application Components, Working with Permissions, Working with Resources

**UNIT III:**

**Exploring User Interface Screen Elements:** Introducing Android Views and Layouts, Displaying Text with TextView, Retrieving Data From Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times From Users, Using Indicators to Display Data to Users, Adjusting Progress with SeekBar, Providing Users with Options and Context Menus, Handling User Events, Working with Dialogs, Working with Styles, Working with Themes

**UNIT IV:**

**Layouts and Animation:** Creating User Interfaces in Android, Organizing User Interface, Using Built-in Layout Classes, Using Built-in View Container Classes, Drawing on the Screen, Working with Text, Working with Bitmaps, Working with Shapes, Working with Animations

**UNIT V:**

**Using Android Data and Storage APIs:** Working with Application Preferences, Working with Files and Directories, Storing Structured Data using SQLite Databases

**Sharing Data between Applications with Content Providers:** Exploring Android's Content Providers, Modifying Content Providers Data, Enhancing Applications using Content Providers, Acting as a Content Provider, Working with Live Folders

**UNIT VI:**

**Using Android Networking APIs:** Understanding Mobile Networking Fundamentals, Accessing the Internet (HTTP),

**Using Android Web APIs:** Browsing the Web with WebView, Building Web Extensions using WebKit, Working with Flash

**UNIT VII:**

**Using Android Multimedia APIs:** Working with Multimedia, Working with Still Images, Working with Video, Working with Audio

**Using Android Telephony APIs:** Working with Telephony Utilities, Using SMS, Making and Receiving Phone Calls

**UNIT VIII:**

**Working with Notifications:** Notifying a User, Notifying with Status Bar, Vibrating the Phone, Blinking the Lights, Making Noise, Customizing the Notification, Designing Useful Notification

**TEXT BOOKS :**

1. Lauren Darcey and Shane Conder, "*Android Wireless Application Development*", Pearson Education, 2nd ed. (2011)

**REFERENCES:**

1. Wei-Meng Lee, *Beginning Android Application Development* By Wrox Publication
2. Frank Ableson and Charlie Collins and Robi Sen, *Unlocking Android Developer's Guide* by Manning Publication Co.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
4	1	0	4

**12DMC30 - DATA WAREHOUSING AND MINING**

**Objectives:**

1. To give basic information about data ware house and their development
2. To give basic conceptual background necessary to design and develop data ware house application

**Outcomes:**

After Completion of the course the student will be able to

1. Develop Decision Making Systems
2. Analyze data and extract patterns using Weka and business objects

**UNIT I**

**Introduction:** Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse System, Major issues in Data Mining.

**Data Preprocessing:** Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

**UNIT II**

**Data Warehouse and OLAP Technology for Data Mining:** Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Further Development of Data Cube Technology, From Data Warehousing to Data Mining

**UNIT III**

**Data Cube Computation and Data Generalization:** Efficient Methods for Data Cube Computation, Further Development of Data Cube and OLAP Technology, Attribute-Oriented Induction.

**UNIT IV**

**Mining Frequent Patterns, Associations and Correlations:** Basic Concepts, Efficient and Scalable Frequent Itemset Mining Methods, Mining various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association Mining

**UNIT V**

**Classification and Prediction:** Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Backpropagation, Support Vector Machines, Associative Classification, Lazy Learners, Other Classification Methods, Prediction, Accuracy and Error measures, Evaluating the accuracy of a Classifier or a Predictor, Ensemble Methods

**UNIT VI**

**Cluster Analysis Introduction :** Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Clustering High-Dimensional Data, Constraint-Based Cluster Analysis, Outlier Analysis

Mining Streams, Time Series and Sequence Data: Mining Data Streams, Mining Time-Series Data, Mining Sequence Patterns in Transactional Databases, Mining Sequence Patterns in Biological Data, Graph Mining, Social Network Analysis and Multirelational Data Mining

**UNIT VII**

**Mining Object, Spatial, Multimedia, Text and Web Data:** Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Data Mining, Multimedia Data Mining, Text Mining, Mining the World Wide Web.

**UNIT VIII**

**Applications and Trends in Data Mining:** Data Mining Applications, Data Mining System Products and Research Prototypes, Additional Themes on Data Mining and Social Impacts of Data Mining.

**TEXT BOOKS:**

1. Jiawei Han & Micheline Kamber, *Data Mining – Concepts and Techniques* - Morgan Kaufmann Publishers, 2nd Edition, 2006.
2. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, *Introduction to Data Mining* – Pearson education.

**REFERENCES:**

1. Sam Aanhory & Dennis Murray , *Data Warehousing in the Real World* – Pearson Edn Asia.
2. K.P.Soman,S.Diwakar, V.Ajay, *Insight into Data Mining*, PHI,2008.
3. Paulraj Ponnaiah, *Data Warehousing Fundamentals* –Wiley student Edition
4. Ralph Kimbal, *The Data Warehouse Life cycle Tool kit* –I Wiley student edition
5. William H Inmon, *Building the Data Warehouse* By John Wiley & Sons Inc, 2005.
6. Margaret H Dunham, *Data Mining Introductory and advanced topics* –Pearson education
7. Arun K Pujari, *Data Mining Techniques* –2nd edition, Universities Press.



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
4	1	0	4

**12DMC31 - DOT NET TECHNOLOGIES**

**Objectives:**

1. In this Course student will become familiar with .Net Architecture
2. It helps to understand the basic ideas to develop applications in C#, VB.Net, ASP.Net
3. It helps to build a web application using .Net

**Outcomes:**

After Completion of the course the student will be able to

1. Develop Real time Projects in .Net Platform
2. Develop the Database Programming using ADO.Net

**UNIT I**

**INTRODUCTION TO .NET FRAMEWORK:** .NET Overview - Behind Microsoft .NET- The .NET Platform - .NET Framework Design Goals -.NET Framework. - The Common Language Runtime - CLR Environment and Executables – Metadata - JIT Compilation - Automatic Memory Management -Assemblies and Manifests - Intermediate Language (IL) - The CTS and CLS - CLR Execution.

**UNIT II**

**Introduction to C#.Net Programming:** A Demonstration of Visual C# - Common Elements in Visual C# - C# Core Language Features – Types – Classes – Structures – Enumeration - Inheritance - Interfaces Polymorphism - Arrays and Collections - Generics - Operator Overloading - Delegates and Events – Introduction to LINQ Programming - Exception Handling - MSIL Programming.

**UNIT III**

**INTRODUCTION TO VISUALBASIC.NET :** Introduction to Visual Basic .NET- Modules-variables- error handling- Arrays, lists - collections – Files- directories- streams - Object serialization - Regular expressions – Threading - Assemblies and AppDomains - Reflection - Windows Forms applications and GDI+ - Windows Forms custom control creation - Windows services.

**UNIT IV**

**APPLICATION DEVELOPMENT USING ADO .NET:** Features of ADO.NET. Architecture of ADO.NET – ADO.NET providers –Accessing Data bases Using ADO.NET- Connection opening and closing– Command object – Data Adapter – Dataset – DataTables - Controlling table views with DataViews and DataRelation Objects- Data-binding in Windows Forms and web forms.

**UNIT V**

**INTRODUCTION to ASP.NET:** Introduction - Working in ASP.NET - ASP.NET Controls - Session & Cookies – Caching - Authentication & Authorization - Web User Controls - Working with Web Config file - Implementing Security - Crystal Reports - Creating Setup and Deployment.

**UNIT VI**

**XML:** Introduction to .NET and XML - Reading and Writing XML - Reading and Writing XML Data Using XmlReader and XmlWriter - Manipulating XML with DOM - XML Data Validation - XML DOM Object Model - Transforming XML Data with XSLT - XML and ADO.NET

**UNIT VII**

**WEB SERVICES:** XML Serialization in the .NET Framework -SOAP Fundamentals- Using SOAP with the .NET Framework.- Web Services protocol and standards – WSDL- Documents - Overview of UDDI - Calling a Web Service from a Browser - Calling a Web -Service by Using a Proxy - Creating a simple web service - Developing a WCF Web Service - Creating and Consuming AJAX-Enabled Web Services - Introducing REST and JSON

**UNIT VII**

**.NET Mobile:** .NET Mobile Introduction - Mobile Example – Emulators – Forms – Events – Input – Validation – Lists – Selection – Images – Utilities

**TEXT BOOKS:**

1. Thuan L. Thai, Hoang Lam *.NET Framework Essentials*, Third Edition , Publisher: O'Reilly. 2003
2. Donis Marshall, *Programming Microsoft® Visual C#® 2008: The Language* , Microsoft Press,2008.

**REFERENCES:**

1. Francesco Balena, *Programming Microsoft® Visual Basic® .NET (Core Reference)* , Microsoft Press, 2006.
2. Step ,Rebecca M. Riordan, *Microsoft® ADO.NET Step by Step* by Microsoft Press, 2002
3. Thiru Thangarathinam , *Professional ASP.NET 2.0 XML*, Wiley Publishing, Inc. 2006
4. Andy Wigley, Peter Roxburgh , *Building Microsoft® ASP.NET Applications for Mobile Devices*, Second Edition Microsoft Press, 2003

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)****MCA – V Semester**

L	T	P	C
4	1	0	4

**12DMC32 - MIDDLE WARE TECHNOLOGIES  
(ELECTIVE – III)****Objectives:**

1. *In this Course student will become familiar with Client server computing*
2. *How Enterprise java beans contain the application's business logic and business data*
3. *To understand the fundamentals of CORBA*

**Outcomes:**

*After Completion of the course the student will be able to*

1. *Develop applications in corporate computing model using .Net*
2. *Develop interactive web service using EJB and CORBA*

**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.

**UNIT-II:**

CORBA with Java: Review of Java concept like RMI, RMI API, JDBC. Client/Server CORBA-style, The object web: CORBA with Java.

**UNIT III:**

Introducing C# and the .NET Platform; Understanding .NET Assemblies; Object -Oriented Programming with C#; Callback Interfaces, Delegates, and Events.

**UNIT IV:**

Building c# applications: Type Reflection, Late Binding, and Attribute-Based Programming; Object Serialization and the .NET Remoting Layer; Data Access with ADO.NET; XML Web Services.

**UNIT-V:**

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 multi count.

**UNIT-VI:**

Existential CORBA: CORBA initialization protocol, CORBa activation services, CORBAIDL mapping CORBA java- to- IDL mapping, The introspective CORBA/Java object.

**UNIT-VII:**

Java Bean Component Model: Events, properties, persistency, Introspection of beans, CORBA Beans

**UNIT-VIII:**

EJBs and CORBA: Object transaction monitors CORBA OTM's, EJB and CORBA OTM's, EJB container frame work, Session and Entity Beans, The EJB client/server development Process The EJB container protocol, support for transaction EJB packaging EJB design Guidelines.

**TEXT BOOKS:**

1. Robert Orfali and Dan Harkey, *Client/Server programming with Java and CORBA* John Wiley & Sons ,SPD 2nd Edition
2. G.Brose, A Vogel and K.Duddy, *Java programming with CORBA* 3rd Edition, Wiley-dreamtech, India John wiley and sons
3. Andrew Troelsen, *C# and the .NET Platform* Apress Wiley-dreamtech, India Pvt Ltd

**REFERENCES:**

1. *M.L.Liu, Distributed Computing, Principles and applications*, Pearson Education
2. Robert Orfali Dan Harkey and Jeri Edwards, *Client/Server Survival Guide* 3rd edition John Wiley & Sons
3. D T Dewire, *Client/Server Computing* TMH.
4. Ron Ben Natan Ori Sasson, *IBM Webspere Starter Kit* TMh, New Delhi
5. Jesse Liberty, *Programming C#*, SPD-O'Reilly.
6. Peter Sestoft and Henrik I. Hansen, *C# Preciesely* Prentice Hall of India
7. *Intoduction to C# Using .NET* Pearson Education
8. *C# How to program*, Pearson Education

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
4	1	0	4

**12DMC33 - MOBILE OS  
(ELECTIVE – III)**

**Objectives:**

1. To Learn Interaction Design for Symbian OS
2. To Learn Kernel Services in Symbian OS
3. To Learn Boot Processes Services like Operating system startup, shutdown, sleep and wakeup events

**Outcomes:**

*After Completion of the course*

1. Students can Gain basic knowledge about operating system is structured
2. Develop the Application using Symbian OS

**UNIT I**

**Introducing EKA2:** The history of EKA2, Basic OS concepts, Symbian OS design

**Hardware for Symbian OS:** Inside a Symbian OS phone, System-on-Chip (SoC), Random Access Memory (RAM), Flash memory, Interrupts, Timers, Direct Memory Access (DMA), Liquid Crystal Display (LCD), Audio, Power management

**UNIT II**

**Threads, Processes and Libraries:** What is a thread?, Nanokernel threads, Symbian OS threads, What is a process?, DProcess class, Scheduling, Dynamically loaded libraries

**Inter-thread Communication:** Client-server ITC, Asynchronous message queues, Kernel-side messages, Publish and subscribe

**UNIT III**

**Kernel Services:** Objects and handles, Services provided to user threads, Example user-accessible services, Services provided by the kernel to the kernel, Timers

**Interrupts and Exceptions:** Exception types, Exceptions on real hardware, Interrupts, Aborts, traps and faults

**UNIT IV**

**Memory Models:** The memory model, MMUs and caches, The memory model interface, The memory models, Programmer APIs, Memory allocation, Low memory

**Platform Security:** Introduction, Unit of trust, Capability model, Data caging

**UNIT V**

**The File Server:** Overview, The file server client API, The file server, File systems

**The Loader:** E32 image file format, ROM image file format, The loader server, Kernel-side code management

## **UNIT VI**

**The Window Server:** The kernel's event handler, Different types of events, How WSERV processes events, Processing key events, Processing pointer events, Client queues, A simple handwriting animation DLL, Window objects and classes, Properties of windows, Drawing to windows, Direct screen access, Platform security in WSERV

**Device Drivers and Extensions:** Device drivers and extensions in Symbian OS, Kernel extensions, The hardware abstraction layer, Device drivers, Differences between EKA1 and EKA2,

## **UNIT VII**

**Peripheral Support:** DMA, Shared chunks, Media drivers and the local media sub-system, Peripheral bus controllers, MultiMediaCard support, USB device support

**Kernel-Side Debug:** Overview, Architecture, The kernel debug interface, Target debugger agents, Stop-mode debug API, Kernel trace channel

## **UNIT VIII**

**Power Management:** Power states, Power framework, Typical power management, Managing idle time, Advanced power management

**Boot Processes:** Operating system startup, Alternative startup scenarios, Operating system shutdown, Operating system sleep and wakeup events

## **TEXT BOOKS:**

1. "*Symbian OS Internals - Real-time Kernel Programming*", John Wiley & Sons, Ltd.

## **REFERENCES:**

1. Michael J. Jipping-Smartphone Operating System Concepts with Symbian OS: A Tutorial Guide – Symbian press – Willey India

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
4	1	0	4

**12DMB03 - ORGANIZATIONAL BEHAVIOUR  
(ELECTIVE – III)**

**Objectives:***In this Course student will learn*

1. Approaches and Models of Organizational Behaviour
2. Decision Making Process in Organization
3. Group versus Individual Interaction in Organization

**Outcomes:***After Completion of the course the student will be able to*

1. Apply Principles of Organizational Behavior
2. Understanding organizational behavior with reference to key organizations in IT Sector.
3. Understand Group Dynamics, organizational Culture and Managing change in organization

**UNIT-I**

Introduction - Nature and scope – linkages with other social sciences - Individual Roles and Organizational Goals - Perspectives of Human Behavior, Approach to Organizational behavior - models of organizational behavior.

**UNIT-II**

Perceptual Management: nature - Process – selection, organization and interpretation – Influencing factors -Motivation – Concepts - Needs and Motives and theories. Leadership and Motivating people - Leadership Theories. Attitudes and Values: formation - types – changes and behavior modification techniques.

**UNIT – III**

Personality Development: Nature - Stages, Determinants of Personality, - Johari Window - Transactional Analysis, Learning Processes - theories, Creativity and Creative Thinking. Leadership – nature – skills.

**UNIT – IV**

Decision Making Process: Behavioral Dimensions, Groups and their formation - Group Dynamics, Informal Organizations, Group versus Individual Interaction.

**UNIT – V**

Inter-Personal Communication: Listening, Feedback, Collaborative Processes in Work Groups, Team Building, Team Decision Making, Conflict Resolution in Groups and Problem Solving Techniques.

**UNIT – VI**

Organizations: Taxonomy, Elements of Structure, Determinants of Structure, Functional Aspects of Structure, Role Impingement, Stress in Organization. Principles Underlying the Design of Organizations, Organizational Culture, Power and Authority.

**UNIT – VII**

Organizational Development: Goals, processes, change – resistance to change – Nature of OD - interventions, OD techniques and OD applications.

**UNIT – VIII**

Case Study: Compulsory. Relevant cases have to be discussed in each unit.

**TEXT BOOKS:**

1. K.Aswathappa: "*Organizational Behavior-Text, Cases and Games*", Himalaya Publishing House, New Delhi, 2008,
2. Steven L McShane, Mary Ann Von Glinow, Radha R Sharma: "*Organizational Behavior*", Tata McGraw Hill Education, New Delhi, 2008.
3. Jerald Greenberg and Robert A Baron: "*Behavior in Organizations*", PHI Learning Private Limited, New Delhi, 2009.

**REFERENCES:**

1. Pareek Udai: "*Understanding Organizational Behavior*", Oxford University Press, New Delhi, 2007.
2. Jai B.P.Sinha: "*Culture and Organizational Behavior*", Sage Publication India Private Limited, New Delhi, 2008.
3. Sharma VS, Veluri: "*Organizational Behavior*", JAICO Publishing House, New Delhi, 2009.



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
4	1	0	4

**12DMC34 - SOFTWARE TESTING METHODOLOGIES  
(ELECTIVE – IV)**

**Objectives:**

1. To Test process and continuous Quality improvement in software development
2. To learn Domain Testing and Logic based Testing
3. To Integrate and Test Various units and components of software system

**Outcomes:**

After Completion of the course the student will be able to

1. Gain the knowledge in Paths, Path products and Regular expressions
2. Perform effective and efficient structural techniques of your software

**UNIT I**

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

**UNIT II**

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

**UNIT III**

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

**UNIT IV**

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

**UNIT V**

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

**UNIT VI**

Logic Based Testing: overview, decision tables, path expressions, kv charts, specifications.

**UNIT VII**

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

**UNIT VIII**

Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools.

**TEXT BOOKS:**

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

**REFERENCES:**

1. Brian Marick, *The craft of software testing* - Pearson Education.
2. P.C.Jorgensen, *Software Testing*,3rd edition, Aurbach Publications(Dist.by SPD).
3. Edward Kit, *Software Testing in the Real World* –Pearson.
4. Perry, *Effective methods of Software Testing*, John Wiley, 2nd Edition, 1999.
5. Meyers, *Art of Software Testing* –John Wiley.
6. N.Chauhan, *Software Testing*, Oxford University Press.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
4	1	0	4

**12DMC35 - ADVANCED DATABASES  
(ELECTIVE – IV)**

**Objectives:**

1. This course is an attempt to provide you with the advanced information about DBMS and their development.
2. This course also provides the conceptual background necessary to design and develop distributed database System for real life applications
3. This course also helps to learn Query optimization, centralized query optimization, Distributed query optimization algorithms.

**Outcomes:**

After Completion of the course the student will be able to

1. How SQL Programs are implemented as a series of primitive operations
2. How DDBs are implemented and how applications are design for those DDBs

**UNIT-1**

**Introduction:** Distributed Data Processing, Distributed Database System, Promises of DDBSs, Problem areas.

**Overview of Relational DBMS:** Relational Database Concepts, Normalization, Integrity rules, Relational data languages.

**UNIT-II**

**Distributed DBMS Architecture:** Architectural Models for Distributed DBMS, DDMBS Architecture.

Distributed Database Design: Alternative Design Strategies, Distribution Design issues, Fragmentation, Allocation.

**UNIT-III**

**Query Processing and decomposition:** Query Processing Objectives, Characterization of query processors, layers of query processing, query decomposition, Localization of distributed data.

**UNIT-IV**

**Distributed query Optimization:** Query optimization, centralized query optimization, Distributed query optimization algorithms.

**UNIT-V**

**Transaction Management:** Definition, properties of transaction, types of transactions. Distributed concurrency control: Serializability, concurrency control Mechanisms & Algorithms, Time stamped & Optimistic concurrency control Algorithms, Deadlock Management.

**UNIT –VI**

**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-VII**

**Distributed object Database Management Systems:** Fundamental object concepts and Models, Object Distributed Design, Architectural Issues, Object Management, Distributed Object storage, Object query Processing.

**UNIT VIII**

**Object Oriented Data Model :** Inheritance, Object identity, persistent programming languages, persistence of objects, comparing OODBMS and ORDBMS

**TEXT BOOKS:**

1. M.Tamer OZSU and Patuck Valduriez: *Principles of Distributed Database Systems*, Pearson Edn. Asia, 2001.
2. Stefano Ceri and Willipse Pelagatti: *Distributed Databases*, McGraw Hill.

**REFERENCES:**

1. Henry F Korth, A Silberchatz and Sudershan : *Database System Concepts*, MGH
2. Raghuramakrishnan and Johhanes Gehrke: *Database Management Systems*, MGH

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
4	1	0	4

**12DMC36 - NETWORK SECURITY & CRYPTOGRAPHY  
(ELECTIVE – IV)**

**Objectives:**

1. This Course is an attempt to Learn Awareness of Security Attacks and Basic Conventional Cryptography Principles
2. To understand the Functionalities of Email Privacy and IP Security
3. To learn the basic Concepts of SNMP

**Outcomes:**

After Completion of the course the student will be able to

1. Design a Security solution for a given application
2. Implement the Firewalls for intranet and internet.

**UNIT – I**

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

**UNIT – II**

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.

**UNIT – III**

Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.

**UNIT – IV**

Email privacy: Pretty Good Privacy (PGP) and S/MIME.

**UNIT – V**

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

**UNIT – VI**

Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

**UNIT – VII**

Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats.

**UNIT – VIII**

Firewall Design principles, Trusted Systems. Intrusion Detection Systems.

**TEXT BOOKS:**

1. William Stallings , *Network Security Essentials (Applications and Standards)* by Pearson Education.
2. Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W.Manzuik and Ryan Permeh, *Hack Proofing your network* by wiley Dreamtech

**REFERENCES:**

1. Eric Maiwald, *Fundamentals of Network Security* by (Dreamtech press)
2. Radia Perlman and Mike Speciner, *Network Security - Private Communication in a Public World* by Charlie Kaufman, Pearson/PHI.
3. Stallings, *Cryptography and network Security*, Third edition, PHI/Pearson
4. Whitman, *Principles of Information Security*, Thomson.
5. Robert Bragg, *Network Security: The complete reference*, Mark Rhodes, TMH

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
0	0	3	2

**12DMC37 - MOBILE APPLICATION DEVELOPMENT LAB**

**Exercise - 01**

Create "Hello World" application. That will display "Hello World" in the middle of the screen in the red color with white background.

**Exercise - 02**

- To understand Activity, Intent
  - Create sample application with login module.(Check username and password)
  - On successful login, go to next screen. And on failing login, alert user using Toast.
  - Also pass username to next screen.

**Exercise - 03**

Create login application where you will have to validate EmailID (UserName). Till the username and password is not validated, login button should remain disabled.

**Exercise - 04**

Create and Login application as above. On successful login , open browser with any URL.

**Exercise - 05**

Create an application that will pass some number to the next screen , and on the next screen that number of items should be display in the list.

**Exercise - 06**

- Understand resource folders :
  - Create spinner with strings taken from resource folder(res >> value folder).
  - On changing spinner value, change image.

**Exercise - 07**

- Understand Menu option.
- Create an application that will change color of the screen, based on selected options from the menu.

**Exercise - 08**

Create an application that will display toast(Message) on specific interval of time.

**Exercise - 09**

Create a background application that will open activity on specific time.

**Exercise - 10**

Create an application that will have spinner with list of animation names. On selecting animation name, that animation should effect on the images displayed below.

**Exercise - 11**

- Understanding of UI :
  - Create an UI such that, one screen have list of all the types of cars.
  - On selecting of any car name, next screen should show Car details like: name , launched date ,company name, images(using gallery) if available, show different colors in which it is available.

**Exercise - 12**

- Understanding content providers and permissions:
  - Read phonebook contacts using content providers and display in list.

**Exercise - 13**

Read messages from the mobile and display it on the screen.

**Exercise - 14**

Create an application to call specific entered number by user in the EditText

**Exercise - 15**

Create an application that will create database with table of User credential.

**Exercise - 16**

Create an application to read file from asset folder and copy it in memory card.

**Exercise - 17**

Create an application that will play a media file from the memory card.

**Exercise - 18**

Create an application to make Insert , update , Delete and retrieve operation on the database.

**Exercise - 19**

Create an application to read file from the sdcard and display that file content to the screen.

**Exercise - 20**

Create an application to draw line on the screen as user drag his finger.

**Exercise - 21**

Create an application to send message between two emulators.

**Exercise - 22**

Create an application to take picture using native application.

**Exercise - 23**

Create an application to pick up any image from the native application gallery and display it on the screen.

**Exercise - 24**

Create an application to open any URL inside the application and clicking on any link from that URI should not open Native browser but that URL should open the same screen.



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)**

MCA – V Semester

L	T	P	C
0	0	3	2

**12DMC38 - DATA WAREHOUSING AND MINING LAB****List of Sample Problems/Experiments:****i)Data Warehousing and Data Mining:****Task 1: Credit Risk Assessment****Description:**

The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient.

To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways.

1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules.
2. Books. Find some training manuals for loan officers or perhaps a suitable textbook on finance. Translate this knowledge from text form to production rule form.
3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant.
4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

**The German Credit Data:**

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset (original) Excel spreadsheet version of the German credit data. In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer !)

A few notes on the German dataset

- DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter).
- owns\_telephone. German phone rates are much higher than in Canada so fewer people own telephones.
- foreign\_worker. There are millions of these in Germany (many from Turrkey). It is very hard to get German citizenship if you were not born of German parents.
- There are 20 attributes used in judging a loan applicant. The goal is the classify the applicant into one of two categories, good or bad.

**Subtasks : (Turn in your answers to the following tasks)**

1. List all the categorical (or nominal) attributes and the real-valued attributes separately.
2. What attributes do you think might be crucial in making the credit assessment ? Come up with some simple rules in plain English using your selected attributes.
3. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.
4. Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly ? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy ?
5. Is testing on the training set as you did above a good idea ? Why or Why not ?
6. One approach for solving the problem encountered in the previous question is using cross-validation ? Describe what is cross-validation briefly. Train a Decision Tree again using cross-validation and report your results. Does your accuracy increase/decrease ? Why ?
7. Check to see if the data shows a bias against "foreign workers" (attribute 20), or "personal-status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss.
8. Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.)
9. Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?
10. Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees ? How does the complexity of a Decision Tree relate to the bias of the model ?
11. You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross-validation (you can do this in Weka) and report the Decision Tree you obtain ? Also, report your accuracy using the pruned model. Does your accuracy increase ? (10 marks)

12.(Extra Credit): How can you convert a Decision Trees into "if-then-else rules". Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules.PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one ! Can you predict what attribute that might be in this dataset ? OneR classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and oneR.

#### Task Resources:

- Mentor lecture on Decision Trees
- Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation)
- Decision Trees (Source: Tan, MSU)
- Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)
- Weka resources:
  - Introduction to Weka (html version) (download ppt version)
  - Download Weka
  - Weka Tutorial
  - ARFF format
  - Using Weka from command line

### **Task 2: Hospital Management System**

Data Warehouse consists Dimension Table and Fact Table.  
REMEMBER The following

#### Dimension

The dimension object (Dimension):

- \_ Name
- \_ Attributes (Levels) , with one primary key
- \_ Hierarchies

One time dimension is must.

About Levels and Hierarchies

Dimension objects (dimension) consist of a set of levels and a set of hierarchies defined over those levels. The levels represent levels of aggregation. Hierarchies describe parent-child relationships among a set of levels.

For example, a typical calendar dimension could contain five levels. Two hierarchies can be defined on these levels:

H1: YearL > QuarterL > MonthL > WeekL > DayL

H2: YearL > WeekL > DayL

The hierarchies are described from parent to child, so that Year is the parent of Quarter, Quarter the parent of Month, and so forth.

About Unique Key Constraints

When you create a definition for a hierarchy, Warehouse Builder creates an identifier key for each level of the hierarchy and a unique key constraint on the lowest level (Base Level)

Design a Hospital Management system data warehouse (TARGET) consists of Dimensions Patient, Medicine, Supplier, Time. Where measures are 'NO UNITS', UNIT PRICE.

Assume the Relational database (SOURCE)

table schemas as follows

TIME (day, month, year),

PATIENT (patient\_name, Age, Address, etc.,)

MEDICINE ( Medicine\_Brand\_name, Drug\_name, Supplier, no\_units, Unit\_Price, etc.,)

SUPPLIER :( Supplier\_name, Medicine\_Brand\_name, Address, etc., )

If each Dimension has 6 levels, decide the levels and hierarchies, Assume the level names suitably. Design the Hospital Management system data warehouse using all schemas. Give the example 4-D cube with assumption names.

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, Chittoor.  
(AUTONOMOUS)****MCA – V Semester**

L	T	P	C
0	0	3	2

**12DMC39 - DOT NET LAB****List of Experiments**

1. Arrays using C#
2. Error Handling and Interfaces Using C#
3. Operator Overloading Using C#
4. Arrays Using VB.Net
5. Regular Expressions Using VB.Net
6. Implementing single & multilevel inheritance Using VB.Net
7. Functions in ASP.Net
8. Session and Cookies in ASP.Net
9. Create a Web Page using XML DOM
10. Design an Student application using Windows Form Controls using VB.Net and ADO.Net.
11. Design a simple web application using ASP .NET and ADO.Net
12. Design an online digital library web application using ASP.Net and ADO.Net.