GURU NANAK COLLEGE(Autonomous)

VELACHERY ROAD, CHENNAI – 600042

(Re-Accredited 'A' grade by NAAC)

BACHELOROF COMPUTER APPLICATION

DEPARTMENT OF COMPUTER APPLICATION

(SEMESTER SYSTEM WITH CREDITS)

Regulations

&

Syllabus

(2017-2020)

APPENDIX – 11 (R & S)
UNIVERSITY OF MADRAS
GURU NANAK COLLEGE (AUTONOMOUS)
BCA DEGREE PROGRAMME IN COMPUTER APPLICATION

SEMESTER SYSTEM WITH CREDITS
(Effective from the Academic year 2017--18)

RULES AND REGULATIONS

1. CHOICE BASED CREDIT SYSTEM (CBCS) WITH GRADING

The College follows the CBCS with grades under the semester pattern. Every course paper is provided with a credit point based on the quantum of subject matter, complexity of the content and the hours of teaching allotment. This is done after a thorough analysis of the content of each subject paper by the members of the Board of studies and with the approval of the Academic Council. Students are also offered with a choice of a variety of Job-oriented courses, Elective courses and courses involving Soft-skills. Students are permitted to choose any course of their interest during the study period and earn extra credits and certificates in addition to the regular hardcore (compulsory) subjects.

The evaluation method under CBCS involves a more acceptable grading system that reflects the personality of the student. This is represented as Cumulative Grade Point Average (CGPA) and Grade Point Average (GPA) which are indicators of Academic Performance of the student. It provides students scope for horizontal mobility as well as empowers them with the flexibility of learning at their convenience.

2. ELEGIBILITY FOR ADMISSION

Candidates for admission to the first year of the UG programme shall be required to have passed the higher secondary examinations (Academic or Vocational Stream) conducted by the Government of Tamil Nadu or an examination accepted as equivalent thereof by the Syndicate of the University of Madras. Students applying for the PG programme should have taken the UG degree in the concerned subject from a recognized university.

3. DURATION OF THE COURSE

The UG course is of three year duration with six semesters and the PG course is of two year duration with four semesters. The odd semester include the period from June to November and the even semester from December to April. There shall not be less than 90 working days for each semester.

4. COURSE OF STUDY

The main subject of study for Bachelor's Degree shall consist of the following:

FOUNDATION COURSES :

PART – I Tamil or Classical Language (Hindi / Sanskrit/ French)

PART – II English

CORE COURSES

PART – III consisting of (a) Main subjects, (b) Allied Subjects, (c) Elective subjects related to the main subject of study and project work.

PART –IV

1. **(a)** Those who have not studied Tamil up to XII standard, and taken a non-Tamil language under **Part – I** shall take Tamil comprising of Two courses (level will be at 6^{th} standard).

(a) Those who have studied Tamil up to XII standard, and taken a non— Tamil language under **Part –I** shall take **Advanced Tamil** comprising of two courses.

(b) Others who do not come under a or b can choose **non-major elective comprising of two courses.**

2. Soft Skills. (I , II, III & IV Semesters)

3. Environmental Studies (IV Semester)

4. Value Education (V Semester)

PART –V Compulsory Extension service

A candidate shall be awarded one credit for compulsory extension service.

All the students shall enroll for **NSS / NCC / NSO (Sports & Games) Rotract / Youth red cross or any other service organization** in the college and shall have to put in compulsory minimum attendance of 40 hours which shall be duly certified by the Principal of the college before **31st March in a year.** If a student LACKS **40 HOURS ATTENDANCE** in the first year, he / she shall have to compensate the same during the subsequent years. Literacy and population, educational field work shall be compulsory components in the above extension service activities.

5. COURSE STRUCTURE:

Sem. No.	Part No.	Course Component	Subject Name	Cdt	Hrs	CIA	ESE	Total
I	I	Language	Language – I	3	6	50	50	100
	II	English	English- I	3	4	50	50	100
	III	Core I	Programming in C Language	4	6	50	50	100
		Core II	Practical – C Programming Lab	4	4	40	60	100
		Allied I	Mathematics I	5	6	50	50	100
	IV	1. NME/ Basic Tamil	Practical - Computing Skills	2	2	40	60	100
		2. Soft Skill I	Essentials of Language and Communication Skills Level-I	3	2	50	50	100
							CREDIT TOTAL = 24	
II	I	Language	Language – II	3	6	50	50	100
	II	English	English- II	3	4	50	50	100
	III	Core III	Digital Logic Fundamentals & Microprocessor	4	5	50	50	100
		Core IV	Practical - Microprocessor Lab	4	5	40	60	100
		Allied II	Mathematics II	5	6	50	50	100
	IV	1. NME/ Basic Tamil	Practical - HTML Lab	2	2	40	60	100
		2. Soft Skill II	Essentials of spoken and Presentation Skills Level-I	3	2	50	50	100
							CREDIT TOTAL = 24	
III	III	Core V	Data Structure and Algorithms	4	5	50	50	100
		Core VI	Programming in C++	4	6	50	50	100
		Core VII	Practical – Data Structures using C++ Lab	4	5	40	60	100
		Core VIII	Operations Research	4	6	50	50	100
		Allied III	Financial Accounting	5	6	50	50	100
	IV	Soft Skill III	Personality Enrichment	3	2		100	100
							CREDIT TOTAL = 24	
IV	III	Core IX	Java Programming	4	6	50	50	100
		Core X	Computer Architecture	4	8	50	50	100
		Core XI	Practical - Java Programming Lab	4	6	40	60	100
		Allied IV	Cost & Management Accounting	5	6	50	50	100
	IV	Soft Skill IV	FLASH Lab	3	2		100	100
		EVS	Environmental Studies	2	2		100	100
							CREDIT TOTAL = 22	
V	III	Core XII	Database Management System	4	6	50	50	100
		Core XIII	Operating System	4	6	50	50	100
		Core XIV	Practical – RDBMS Lab	4	6	40	60	100
		Elective – I	Visual Programming	5	6	50	50	100
		Elective – II	IDE- Multimedia Systems	5	5	50	50	100
	IV	Value Education	Value Education	2	1		100	100
							CREDIT TOTAL = 24	
VI	III	Core XV	PHP Scripting Language	4	6	50	50	100
		Core XVI	Software Engineering	4	6	50	50	100
		Core XVII	Computer Networks	4	6	50	50	100
		Core XVIII	Mini Project	4	6	40	60	100
		Elective - III	Cloud Computing	5	6	50	50	100
	V	Extension Activity		1		-	-	-
							CREDIT TOTAL = 22	
							OVERALL CREDIT TOTAL = 140	

ANNEXURE

Course Component	Subject Name
Elective - I	1. Visual Programming 2. Unix Programming 3. Data Mining
Elective - II	1. Multimedia Systems 2. E-Commerce 3. Client/Server Computing
Elective - III	1. Cloud Computing 2. Software Testing 3. Distributed Computing

- Examination will be held in the even semester.

Under Part IV of the course, students are required to register separately for two Non-Major Elective papers, choosing preferably papers offered by other departments during the First and Second semester. The marks obtained under Part IV would not be included for classification of the candidate although a pass is mandatory. Students should have obtained the minimum credit under Part V to be eligible to receive the degree.

1. EXAMINATIONS

Continuous Internal Assessment (CIA) and End Semester Examination (ESE), each carrying 50% marks, will form the basis for grading student performance in each paper.

CONTINUOUS INTERNAL ASSESSMENT

Continuous assessment will be made by teachers responsible for the course they teach on dates centrally fixed by the college. Every semester has two centralized CIA examinations and one model examination for each paper. The Continuous Assessment Tests (CAT) of one and a half hour duration would be held on completion of 30 and 60 working days each semester. Students who fail to write one or more CATs will have to register for a re-test after obtaining clearance from the HOD and Dean Academics. Re-test is generally not allowed except in the case of students who miss CA tests because they were away on those days representing college in sports or cultural activities or for any justifiable reason acceptable to the Principal/Dean. Principal/Dean may grant special permission to such candidates for taking just one additional paper of three hour duration covering the entire syllabus of that paper. This test should be taken before the commencement of the End of Semester Examination of that semester. A Model exam of three hours duration will be held at the end of each semester. The schedule for these tests is as follows:

C.I.A. Test	Schedule	Syllabus Coverage
I	After 30 working days from the commencement of the semester	40%
II	After 60 working days of the semester	80%
III (model)	After 80 working days of the semester	95%

The components for the CIA are as follows:

Internal Components			
Assessment Type	**Nature**	**Maximum marks**	**% of Weightage**
CIA	Written test I	50	5
	Written test II	50	5
	Model examination	100	10
	Assignment		10
	Class activities		15
	Attendance		5
	Total		**50**

The class activity relates to a programme of accepted innovative techniques such as seminars, quiz, port folio creation, MCQ, power point presentation, objective tests, role play etc. This class activity for evaluation will be fixed before the commencement of the semester with the approval of the HOD.

A student should attend at least one test in order to declare him/her as pass in the internal assessment tests even though he/she has got pass marks in the overall internal components. Candidates who fail in a paper for want of sufficient marks in CIA will have to seek improvement by coming back to the semester for CA exams or repeating it after the completion of the course at the time of regular CIA.

A record of all such assessment procedures will be maintained by the department and is open for clarification by the students. Students will have the right to appeal to the Principal in case of glaring disparities in marking.

CIA marks for practical subjects will be awarded by the respective faculty based on the performance of the student in the model practical examination, observation notebook, submission of record books, regularity and attendance to the practical classes. The attendance particulars for practical classes will be maintained by the concerned faculty.

Marks for attendance will be awarded as per the following:

Percentage of General Attendance	Marks awarded
90-100	5
75-89	4
60-75	3
<60	0

END OF SEMESTER EXAMINATIONS (ESE)

- Examinations will be conducted during each semester after the completion of a minimum of 90 working days. Examinations will be held for all papers of the course in Nov/Dec and April/May for all UG and PG courses. Practical examinations will be conducted only during the end of the even semester either before the commencement of the theory exam or after the theory exams. The schedule for ESE Practical will be notified by the Controller of Examinations in consultation with the Dean of Sciences.
- A candidate will be permitted to appear for the End of Semester examinations for any semester if:
  - ❖ He / She secures not less than 75% of attendance in the working days during the semester.
  - ❖ His / Her conduct has been satisfactory
  - ❖ He / She should have applied for the examination
  - ❖ He / She should have paid the requisite examination fee

  .
- The attendance requirements to appear for the ESE is as follows:
  - Students must have **75%** of attendance in each part of the course of study to appear for the examination.

- Students who have **65% to 74.9%** of attendance shall apply for condonation in the prescribed form along with the prescribed fee after obtaining permission from the Dean. Students cannot claim condonation as a matter of right. Submission of medical certificate is normally not accepted to condone shortage of attendance.
- Students who have **50% to 64.9%** of attendance will fall under the ―Withheld‖ category. Such students cannot take the ESE exams. They should apply to the Principal for permission to write the next supplementary examination and pay the requisite fee for this purpose.
- Students who have less than **50%** of attendance fall under the ―detained‖ category and **<u>are not</u>** permitted to appear for the examination. **They shall redo the semesters after completion of the course and appear for the examination after securing the required percentage of attendance.** The decision of **Principal** remains final and binding in all respects.

- Students who do not get the minimum marks to pass in the ESE shall compulsorily re-appear for the paper in the subsequent semester after paying the required fee.
- Candidates who fail in any of the papers in the UG and PG End of Semester examinations shall complete the paper concerned within 5 years from the date of admission to the particular course. If they fail to do so, they shall re-register their names and take the examination in the revised regulations/syllabus of the paper in force at the time of their reappearance. In the event of removal of that paper consequent to change of regulation and/or curriculum after 5-year period, the candidate shall have to take up an equivalent paper in the revised syllabus as suggested by the Chairman, Board of Studiesconcerned.

Instant Examinations. (Special Supplementary Examination)

In order to provide an opportunity to the final UG and PG students to obtain the degree in the same year itself and to facilitate vertical mobility, special supplementary End of Semester examinations will be conducted in about 20 days from the date of publication of results every year for the final semester theory papers and also for the candidates who fail in only one theory paper of the previous semesters. Students, who wish to apply for special supplementary End of Semester examinations, can do so within 7 days from the date of publication of results.

Malpractice cases, if any, will not be permitted to appear for <u>Supplementary Examination</u>

The details of the ESE is as follows:

External Component			
Assessment type	**Comprehensive**	**Maximum mark**	**% of Weightage**
External Exam	3 hours examination	100	50
	Grand total (CIA+ESE)		**100**

2. CONDUCT OF EXAMINATION

- Chief Superintendent of exams will be the Principal or a person appointed by him. The conduct of end of semester examination lies with the team headed by the Chief Superintendent.
- Time-table for examinations will be finalized the office of the Controller of Examinations and will be displayed well in advance i.e., 20 days prior to the commencement of examination.
- The Hall tickets for eligible students will be issued **5** days prior to the commencement of examination.
- For Subjects like Environmental Studies, Value Education etc. End Semester Examinations may be conducted on- line or along with the regular ESE.

3. VALUATION

- Valuation of the answer scripts are undertaken at the central valuation camp lead by the Controller of Examination or the Camp Officer appointed by the Controller of Examinations.
- Single valuation of answer scripts by external examiners is adopted for both UG and PG courses.

4. PUBLICATION OF RESULTS

The Examination results will be published on the web during the second / third week of May for the II, IV and VI semester examinations and during the second / third week of December for the I, III and V semester examinations

PROVISION FOR OBTAINING PHOTOCOPY AND REVALUATION OF VALUED ANSWER SCRIPTS

- A student can request the Principal for a photocopy of the answer book within seven days from the announcement of the results. Such requests should be endorsed by the HOD and submitted along with the prescribed fees for forward transcription to the COE.
- Students intending to go for revaluation after obtaining the photocopy of the answer script, shall apply to the COE in the prescribed format along with fees duly endorsed by the HOD and Principal. The application should reach the COE within 7 days from receipt of the photocopy of the answer script.
- Revaluation /obtaining photocopy of answer scripts is permissible only for the current semester papers and not for any arrear paper.
- For re-valuation, the answer papers will be valued by two external examiners separately and the average mark of the valuations will be taken into account.
- The revaluation results will be forwarded to the Principal within 15 working days.
- Revised mark statement will be issued after withdrawing the previous one, if the marks obtained in revaluation are higher than the marks obtained earlier. In other cases, the original marks obtained earlier will be retained and the matter will be intimated to the student concerned as _No change‘.

5. CLASSIFICATION OF PERFORMANCE – GRADING SYSTEM FOR THE SEMESTER

A candidate shall be declared to have qualified for the award of the Degree provided the candidate has successfully completed the Programme requirements and has passed all the prescribed subjects of study in all the semesters.

Conversion of Marks to Grade Points and Letter Grade (Performance in a paper/course)

Range of Marks		Grade Points		Letter Grade		Description	
PG & UG		**PG & UG**		**PG & UG**		**PG & UG**	
90-100		9.0-10.0		O		Outstanding	
80-89		8.0-8.9		D+		Excellent	
75-79		7.5-7.9		D		Distinction	
70-74		7.0-7.4		A+		Very Good	
60-69		6.0-6.9		A		Good	
50-59		5.0-5.9		B		Average	
PG	**UG**	**PG**	**UG**	**PG**	**UG**	**PG**	UG
00-49	40-49	0.0	4.0-4.9	U	C	Re-appear	Satisfactory
	00-39		0.0		U		Re-appear
ABSENT		0.0		AAA		ABSENT	
B.Com (Hons)		**B.Com (Hons)**		**B.Com (Hons)**		**B.Com (Hons)**	
00-59		0.0		U		Reappear	

Classification of Grades

CGPA		GRADE		CLASSIFICATION OF FINAL RESULT	
PG & UG		**PG & UG**		**PG & UG**	
9.5-10.0		O+		First Class – Exemplary*	
9.0 and above but below 9.5		O		First class- outstanding*	
8.5 and above but below 9.0		D++		First Class with Distinction*	
8.0 and above but below 8.5		D+			
7.5 and above but below 8.0		D			
7.0 and above but below 7.5		A++		First Class	
6.5 and above but below 7.0		A+			
6.0 and above but below 6.5		A			
5.5 and above but below 6.0		B+		Second Class	
5.0 and above but below 5.5		B			
PG	**UG**	**PG**	**UG**	**PG**	**UG**
0.0 and above but below 5.0	4.5 and above but below 5.0	U	C+	Re – appear	Third Class
	4.0 and above but below 4.5		C		
	0.0 and above but below 4.0		U		Re- appear

*** The candidates who have passed in the first appearance and within the prescribed semester of the UG/PG Programme (Core, Allied, Elective, Project and Internship courses) alone are eligible.**

Grading For a Semester/Year:

GRADE POINT AVERAGE [GP] = $\sum_i C_i G_i / \sum_i C_i$

$$GPA = \frac{\text{Sum of the multiplication of grade points by the credits of the courses}}{\text{Sum of the credits of the courses (passed) in a semester/year}}$$

For the entire programme:

CUMULATIVE GRADE POINT AVERAGE [CGPA] = $\sum_n \sum_i C_{ni} G_i / \sum_n \sum_i C_{ni}$

$$CGPA = \frac{\text{Sum of the multiplication of grade points by the credits of the entire programme}}{\text{Sum of the credits of the courses of the entire programme}}$$

(CGPA is calculated only if the candidate has passed in all the courses in the entire programme)

C_1 = Credits earned for course *i* in any semester / year.
G_1 = Grade Point obtained for course *i* in any semester / year.
n refers to the semester/year in which such courses were credited.
C_i = Credits earned for course i in any semester.
G_n = Grade Points obtained for course i in any semester.
n refers to the semester in which such courses were credited

Passing Minimum

- For all U.G.Programme except B.Com (Hons) passing minimum of each subject is 40% in CIA, 40% in E.S.E and 40% in aggregate i.e., CIA + ESE
- For B.Com (Hons)

a)No passing minimum for internal b) For ESE, passing minimum is 50% for languages, NME, value education, EVS and 60% for core subjects/internship/project and viva voce c) In aggregate the passing minimum (Ext + Int) is 50% for for languages, NME, value education, EVS and 60% for core subjects/internship/project and viva voce.

- Passing minimum of each subject/course under PG Programme is 50% in CIA, 50% in ESE and 50% in aggregate i.e., CIA + ESE
- Passing minimum of each subject under Career Oriented Programmes, Certificate Courses and Diploma courses is 40% in CIA and ESE and 40% in aggregate i.e., CIA + ESE. Both UG and PG students are at liberty to study these courses jointly
- Passing minimum for each PG Diploma course offered by a PG Department as a part of the curriculum to its students is 50% in ESE and 50% in aggregate i.e., CIA + ESE, since graduates alone are admitted to these Courses

.

6. REQUIREMENT FOR PROCEEDING TO SUBSEQUENT SEMESTER

(a) Candidates shall register their names for the first semester examination after admission in the UG courses.

(b) Candidates shall be permitted to proceed from the first semester up to final semester irrespective of their failure in any of the semester examinations subject to the condition that the candidate should register for all the arrear subjects of earlier semesters along with current (subsequent) semester subjects

12. ISSUE OF CERTIFICATES

1. Marksheet

Mark sheets will be issued every semester to all students who have taken the examination.

2. Consolidated Mark Sheet

Consolidated mark sheets will be given to final year students along with total credits earned only to those who have passed all the papers prescribed for the respective degree.

3. Transcript

Students who are desirous to obtain any other certificates like Transcript certificates for joining courses of study in other Universities in India or abroad or for obtaining scholarships, can obtain these certificates from the office of the Controller of Examinations. A requisition letter duly signed by the Student and forwarded by the Principal along with fee challan is to be submitted to the office of the Controller of Examinations. The certificates will be provided within 15 working days.

4. Provisional Certificate

A copy of the results of the successful final year students will be sent to the University of Madras in the prescribed format in July/August and the University will issue a Provisional Certificate through the College. This may take around 2 months.

5. Corrections in the Certificates

Any corrections like name, date of birth etc., can also be made in the certificate. A letter of request duly signed by the student, HOD and Principal along with the prescribed fee paid challan is to be forwarded to the office of the Controller of Examinations. The time line to update will be 15 working days. The amount once paid will not be refunded under any circumstances.

6. Issue of Duplicate Mark Sheet

In case of loss of mark sheet / certificate, a duplicate may provided after submitting a non-traceable certificate issued from the Police station duly signed by an Inspector or Sub Inspector. A requisition letter duly signed by the Principal along with the requisite fees should also be submitted to the office of the Controller of Examinations. Certificates which are torn will not be replaced.

7. Duplicate Provisional Certificate / Degree Certificate :

Students have to apply directly to the University of Madras for duplicate provisional certificate and degree certificate.

8. Verification of Qualification

The agencies who requests for verification of educational qualifications of students under autonomous mode of this college and students who opt for higher studies / employment and who requires verification of educational qualification, shall apply to the Principal to this effect along with the prescribed fees. The letter of request has to be forwarded to the OCOE. The relevant certificate will be issued within 15 working days from the office of the Principal.

13. CONVOCATION AND NOTICE

1. Convocation

Students must apply for their Degree certificates along with copy of the provisional certificates in the application form issued by University of Madras and submit the same in the college office on or before the last date fixed by the college. Every year after the Convocation held by University of Madras, the college will hold a Graduation day / convocation in which the Degree certificates will be distributed to the students who are present. For others it will be issued through the college admin office.

2. Notice

Candidates who have completed the duration of the course and left the College, can get information regarding Supplementary Examinations, issue of examination application forms, certificates and application for Graduation day through the college web site and general notice board. Regular students will however be informed of the examinations by circulation, in addition to the modes mentioned above**.**

No candidate will be communicated individually.

The liability lies on the candidates for their certificates. The College shall not be liable for whatever lapse that occurs due to the ignorance of the candidates.

END SEMESTER EXAMINATION QUESTION PAPER PATTERNFOR THEORY PAPERS WITHOUT PRACTICAL

QUESTION ALLOTMENT	**MAXIMUM 100 MARKS** **PASSING MINIMUM 40 MARKS** **THREE HOURS DURATION**
QUESTION 1-12 **Answer any 10 out of 12**	**PART-A (10X3=30 MARKS)** **ANSWER ANY 10 QUESTIONS** **EACH QUESTION CARRIES 3 MARK**
QUESTION 13-20 **Answer any FIVE out of 8**	**PART-B (5X 6=30)** **ANSWER ANY FIVE QUES TIONS** **EACH QUESTION CARRIES 6 MARKS**
QUESTION 21 TO 26 **Answer any FOUR out of 6**	**PART-C (4X 10=40 MARKS)** **ANSWER ANY FOUR QUES TIONS** **EACH QUESTION CARRIES 10 MARKS**

CORE - I Programming in C

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 4

SEMESTER: I **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the basic concepts of C programming
- This course is designed to expand the knowledge of C programmers by teaching some of the more advanced features of the C language
- The course material includes many examples. Since an understanding of the topics of this course is a basic need of every student who wants to excel in C programming, the course includes many opportunities for hands-on experience

UNIT I (18hrs)
Introduction to computer - Fundamental Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions.

UNIT II (18hrs)
Data input output functions - Simple C programs - Flow of control - if, if-else, while, do-while , for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

UNIT III (18hrs)
Functions –Definition - proto-types - Passing arguments – Recursions- Storage Classes - Automatic, External, Static, Register Variables – Multi-file programs.

UNIT IV (18hrs)
Arrays - Defining and Processing - Passing arrays to functions – Multi-dimension arrays - Arrays and String. Structures - User defined data types - Passing structures to functions - Self-referential structures – Unions - Bit wise operations.

UNIT V (18hrs)
Pointers-Declarations- Passing pointers to Functions - Operation in Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers – Files- Creating , Processing ,Opening and Closing a data file.

1. Recommended Texts

i.E.Balaguruswamy, 1995,Programming in ANSI C, TMH Publishing Company Ltd.

2. Reference Books

i.H. Schildt, 2004, The Complete Reference, 4th Edition, TMH
ii Gottfried,B.S, 1996, Programming with C, Second Edition, TMH Pub. Co. Ltd., New Delhi .
iii.Kanetkar Y,1999, Let us C, BPB Publications., New Delhi.
iv. Kamthane,2002,Programming with ANSI & Turbo C , First Edition,Pearson Education , New Delhi

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE – II Practical – C Programming Lab

SUBJECT CODE:	PRACTICAL	MARKS :100

CREDIT: 4

SEMESTER: I **TOTAL HOURS:60**

COURSE OBJECTIVES

- This course gives exposure to hands on training in C programming
- To familiarize the student with basic concepts of computer programming and developer tools.
- To present the syntax and semantics of the "C" language as well as data types offered by the language
- To allow the student to write their own programs using standard language infrastructure regardless of the hardware or software platform

Summation of Series :

1. Sin(x), 2. Cos(x), 3. Exp(x) (Comparison with built in functions)

String Manipulation :

1.Counting the no. of vowels, consonants, words, white spaces in a line of text and array of lines
2.Reverse a string & check for palindrome.

Recursion :

1.${}^{n}P_{r}$, ${}^{n}C_{r}$
2.GCD of two numbers
3.Fibonacci sequence
4.Maximum & Minimum

Matrix Manipulation :

1.Addition & Subtraction
2.Multiplication
3.Transpose of a matrix

ALLIED I - MATHEMATICS – I

SUBJECT CODE:	THEORY	MARKS :100

CREDITS: 5

SEMESTER: I **TOTAL HOURS:90**

COURSE OBJECTIVES: To improve basics in Mathematics and analytical skills

UNITI: (18hrs)
ALGEBRA: Summation of Series - Binomial, Exponential and Logarithmic Series (Without proof) and Simple Problems.
Chapter 2, Section 2.1.3, 2.2, 2.2.1, 2.3, 2.3.3

UNIT II: (18hrs)
MATRICES: Eigen Values – Eigen Vectors - Cayley - Hamilton Theorem (without proof)
Chapter 4 Section 4.5, 4.5.2, 4.5.3

UNIT III: (18hrs)
THEORY OF EQUATIONS: Polynomial equations, irrational roots, complex roots, Reciprocal equations - Approximation of roots of a polynomial equation by Newton's Method
Chapter 3, Section 3.1 to 3.4.1

UNIT IV: (18hrs)
DIFFERENTIAL CALCULUS: n^{th} derivatives - Leibnitz Theorem - Jacobians - Radius of Curvature (Cartesian Coordinates only) – Maxima and Minima of functions of two variables.
Chapter 1, Section 1.1.1 to 1.3.1 and Section 1.4.3

UNIT V: (18hrs)
TRIGONOMETRY: Expansions of Sinnθ, Cosnθ, tannθ - Expansions of $Sin^n\theta$, $Cos^n\theta$- Hyperbolic and Inverse hyperbolic functions.
Chapter 6, Section 6.1 to 6.3.

Content and treatment as in
Allied Mathematics Volume I and II by P. Duraipandian and S. Udayabaskaran, S. Chand Publications

1. Recommended Texts
1. Allied Mathematics,A.Singaravelu.
2. Ancillary Mathematics, A. ManickavasagamPillai and Narayanan.
3. Allied Mathematics,P.R.Vittal.

2. Reference Books
1. Allied Mathematics, S.G. Venkatachalapathy
2. P.Kandasamy and K.Thilagavathi,Allied Mathematics Volume I and Volume II -- 2004, S.Chand and Co, New Delhi.
3. Ancillary Mathematics Volume 1 and 2 by P.Balasubramanian&K.G. Subramanian.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
Section A	**Definition / Principles** Answer any **10**questions	1 – 12	2	**20**
Section B	**Short Answer** Answer any **5** questions	13–20	8	**40**
Section C	**Essay** Answer any **2** questions	21– 24	20	**40**
				100

Distribution of Questions:

Sections	Units	No. of Questions	
		Theory	Problems
Section A	Unit – 1		2
	Unit – 2	1	1
	Unit – 3	1	1
	Unit – 4		2
	Unit – 5		2
Section B	Unit – 1		1
	Unit – 2		1
	Unit – 3		1
	Unit – 4		1
	Unit – 5		1
Section C	Unit – 1		21 (a),(b)
	Unit – 2		22(a),(b)
	Unit – 3		23(a),(b)
	Unit – 4		24(a)
	Unit - 5		24(b)

For Section A : Two questions can be taken from any of 5 units
For Section B : Three questions can be taken from any of the 5 units.

NME - COMPUTING SKILLS – Practical

SUBJECT CODE:	PRACTICAL	MARKS :100

CREDIT: 2

SEMESTER: I **TOTAL HOURS:30**

COURSE OBJECTIVES

- The major objective in introducing the Computer Skills course is to impart training for students in Microsoft Office which has different components like Ms word, MS Excel, Ms Access, Power point etc., at two levels based on their knowledge and exposure.
- It provides essential skills for the user to get adapted to any work environment, as most of the systems in any workplace have Ms Office installed for their day to day activities. The course is highly practice oriented rather than regular class room teaching

Unit I : **(6hrs)**
Introduction to Computers – Classification of computers; Role of Computers in society; Inside Computers – Hardware (processing, memory, i/o, storage), Software(systems, application), CPU, OS (DOS, Windows, Unix, Linux), Storage devices; Programming – Overview, need for languages, skills; Networking Basics; Virus; Hacking

Unit II : **(6hrs)**
Word Processing – Open, Save and close word document; Editing text- tools, formatting, bullets; Spell Checker; Navigating in word – keyword, Mouse; document formatting- paragraph alignment, indentation, headers and footers, numbering; printing- preview, options

Unit III : **(6hrs)**
File Management - Understanding the importance file management, backing of files, Navigating thru My Computer and Windows Explorer; Files and Folders – editing, retrieving, deleting, renaming , subfolders – manipulate windows – maximize, minimize; Power point basics – terminology, templates, viewing.

Unit IV : **(6hrs)**
Spreadsheets – MS Excel – opening, entering text and data, formatting, navigating; Formulas – entering, handling and copying; Charts –creating, formatting and printing, header and footer, centering data, printing

Unit V : **(6hrs)**
Networks – Internet Explorer- components; www – working, browsing, searching, saving – Bookmark – favorite, create, delete – Printing a web page; email- creating, receiving, reading and sending messages
Note : *Unit II to Unit V needs exposure thru Practicals*

References:

1. Introduction to Computers – Peter Norton, Tata McGraw Hill
2. Microsoft 2003 – Jennifer Ackerman Kettell, Guy Hat-Davis, Curt Simmons, Tata McGraw Hill

CORE - III Digital Logic Fundamentals & Microprocessor

SUBJECT CODE:	THEORY & PRACTICAL	MARKS :100

CREDIT: 4

SEMESTER: II **TOTAL HOURS:75**

COURSE OBJECTIVES

- This course probes fundamental ideas of Basic Digital Electronics and Microprocessor subject seeking to provide wide exposure to the basic concepts of Digital Electronics along with the dynamic implementations of these concepts into Computer hardware.
- This three unit course provides an introduction to microprocessors. It uses assembly language to develop a foundation on the hardware, which executes a program. Memory and I/O interface design and programming.

UNIT I (15hrs)

Fundamentals of Computer - Number systems - Conversion from one number system to another - Logic gates - Truth tables. Boolean algebra - Axioms - Truth table simplification of Boolean function - K - map method

UNIT II (20hrs)

Brief discussion about Combinational Circuits and Sequential Circuits : Adders (Half Adder, Full Adder), Subtractors (Half Subtractor, Full Subtractor) – Decoder – Encoder – Multiplexers – Demultiplexers – Flip Flops- RS, JK, D and T Flip flops

UNIT III (15hrs)

Introduction to microcomputers - microprocessor-Intel 8085 microprocessor - architecture – pin out of 8085 - MPU 8085 – 8085 instruction set and classifications – instruction formats -addressing modes.

UNIT IV (10hrs)

8085 assembly language programs: simple programs – 8 –bit addition and subtraction , BCD addition-BCD subtraction -multiplication and division -programming techniques such as looping - dynamic debugging.

UNIT V (15hrs)

Peripheral and Interfacing : Peripheral devices – Interfacing - memory mapped I/O and I/O mapped I/O-:Interrupts in 8085 –vectored interrupts - Programmable peripheral interface- DMA.

1. Recommended Texts

i. M.M. Mano, Digital Logic and Computer Design, Pearson Education .

ii. V.Rajaraman,2002, Fundamentals of Computers, Third Edition, PHI, New Delhi.

iii. B. Ram, Microprocessor and its Architecture. .

iv Ramesh S. Gaonkar, Microprocessor architecture programming and its applications with 8085, Third Edition,

2. Reference Books

i . T.C.Bartee,1991,Computer Architecture and logical Design, McGraw Hill.

ii . Srinath.N.K , 8085 Microprocessor programming and interfacing

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE - IV Practical - MICROPROCESSOR LAB

SUBJECT CODE:	THEORY & PRACTICAL	MARKS :100

CREDIT: 4

SEMESTER: II **TOTAL HOURS:75**

COURSE OBJECTIVES

- This course gives hands on training in Microprocessor Assembly Language Programming
- It uses assembly language to develop a foundation on the hardware, which executes a program. Laboratories directly related to microprocessor functions and its interfaces

(i) 8 –bit Addition and Subtraction
(ii) BCD addition and subtraction
(iii) Multibyte Addition and Subtraction
(iv) Find the largest – two 8 bit values
(v) Find the smallest – two 8 bit values
(vi) Find the largest number in an array
(vii) Find the smallest number in an array
(viii) Sum of series – 8 bit Hexa Decimal Numbers
(ix) Sum of series – BCD numbers
(x) Arrange the given numbers in Ascending and Descending order
(xi) Find the square of given number by using look-up table

ALLIED – II MATHEMATICS – II

SUBJECT CODE:	THEORY	MARKS :100

CREDITS: 5

SEMESTER: II **TOTAL HOURS:90**

COURSE OBJECTIVES: To improve basics in mathematics and analytical skills

UNIT-I: (18hrs)

INTEGRAL CALCULUS :- Bernoulli's formula – Reduction formula for $\int \text{Sin}^n x\,dx$ - $\int \text{Cos}^n x\,dx$.

Chapter 2, Sections 2.7 and 2.9

UNIT- II: (18hrs)

FOURIER SERIES : Fourier series for function in $(\alpha,\alpha+2\pi)$, Half-range Sine and cosine series

Chapter 4, Section 4.1 to 4.2

UNIT – III: (18hrs)

DIFFERENTIAL EQUATION : Second order Differential Equation with Constant Coefficient s.Differential equation of the form $(aD^2+bD+C)y = e^{ax}\,ø\,(x)$ where a, b, c are constants, $ø\,(x)$ = Sin mx (or) Cos mx (or) x^m. **PARTIAL**

DIFFERENTIALEQUATION : Eliminating Arbitrary constants and functions - Four Standard types.$f(p,q) = 0$; $f(x,p,q) = 0$, $f(y,p,q) = 0$, $f(z,p,q) = 0$.

Chapter 5, Section 5.2, 5.2.1

Chapter 6, Section 6.1 to 6.3

UNIT – IV: (18hrs)

Laplace Transformation - Basic Properties and Simple Problems -

$L[e^{at}f(t)]$ - $L[t^n f(t)]$ - $L[e^{at}\,t\,f(t)]$ - $L[f(t)/t]$.

Chapter 7, Section 7.1.1 to 7.1.4

UNIT – V : (18hrs)

Inverse LaplaceTransformation : - Solving Differential Equation using Laplace Transformation.

Chapter 7, Section 7.2 to 7.3

Content and treatment as in

Allied Mathematics Volume I and II by P. Duraipandian and S. Udayabaskaran, S. Chand Publications

1. Recommended Texts

1. Allied Mathematics,A.Singaravelu.
2. Ancillary Mathematics, A. ManickavasagamPillai and Narayanan.
3. Allied Mathematics,P.R.Vittal.

2. Reference Books

1. Allied Mathematics, S.G. Venkatachalapathy
2. P.Kandasamy and K.Thilagavathi, Allied Mathematics Volume I and Volume II -- 2004, S.Chand and Co, New Delhi.
3. Ancillary Mathematics Volume 1 and 2 by P.Balasubramanian&K.G. Subramanian.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
Section A	**Definition / Principles** Answer any 10 questions	1 – 12	2	**20**
Section B	**Short Answer** Answer any **5** questions	13–20	8	**40**
Section C	**Essay** Answer any **2** questions	21– 24	20	**40**
				100

Distribution of Questions:

Sections	Units	No. of Questions	
		Theory	Problems
Section A	Unit – 1		2
	Unit – 2	1	1
	Unit – 3		2
	Unit – 4		2
	Unit – 5		2
Section B	Unit – 1		1
	Unit – 2		1
	Unit – 3		1
	Unit – 4		1
	Unit – 5		1
Section C	Unit – 1		21(a)
	Unit – 2		21(b)
	Unit – 3		22(a),22(b)
	Unit – 4		23(a),23(b)
	Unit - 5		24(a),(b)

For Section A : Two questions can be taken from any of 5 units
For Section B : Three questions can be taken from any of the 5 units.

NME – Practical – HTML Lab

SUBJECT CODE:	PRACTICAL	MARKS :100

CREDIT: 2

SEMESTER: II **TOTAL HOURS:30**

COURSE OBJECTIVES:

- This course introduces to the programming in HTML

01. Write a script to create an array of 10 elements and display its contents.

02. Create a simple calculator using form fields. Have two fields for number entry and one field for the result. Allow the user to be able to use plus, minus, multiply and divide.

03. Create a document and add a link to it. When the user moves the mouse over the link, it should load the linked document on its own. (user is not required to click on the link)

04. Create a document which opens a new window without a toolbar, address bar or a status bar that unloads itself after one minute.

05. Design an HTML page that includes document structure tags, title, line break, multiple headings and link to e-mail address.

06. Create an HTML file which is the main page with an image and some text messages along with hyperlinks which is linked to various pages. The navigation should be such that the links take you to the appropriate page and then back to the main page.

07. Create a HTML page to demonstrate the usage of Frames. Choose the content of the page on your own.

08. Design an application for pay slip through HTML forms.

09. Make a page with a heading. Make the heading large, bold, italic and center it across the top of the page.

10. Design a Web Page for Student Information System.

CORE - V Data Structure & Algorithms

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 4

SEMESTER: III **TOTAL HOURS:75**

COURSE OBJECTIVES

- This course introduces fundamental data structures, algorithms, and abstract data types. Main topics include data structures such as arrays, linked lists, stacks, queues, graphs, and trees, and algorithms such as those that are used for list manipulation, graph searches, sorting, searching, and tree traversals.
- Design algorithms for solving problems that use data structures such as arrays, linked lists, stacks, queues, graphs, and trees, and algorithms such as those that are used for list manipulation, graph manipulation (e.g., depth-first search), sorting, searching, and tree traversals

UNIT - I: (10hrs)

Definition of a Data structure - primitive and composite Data Types, Asymptotic notations, Arrays, Operations on Arrays, Order lists.

UNIT - II: (15hrs)

Stacks - Applications of Stack - Infix to Postfix Conversion, Recursion, Maze Problems - Queues - Operations on Queues, Queue Applications, Circular Queue.

UNIT - III : (20hrs)

Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations, Applications - Ordering of Books in Library (Alphabetical Ordering).

UNIT - IV : (20hrs)

Trees and Graphs: Binary Trees - Conversion of Forest to Binary Tree, Operations - Tree Traversals; Graph - Definition, Types of Graphs, Hashing Tables and Hashing Functions, Traversal - Shortest Path; Dijkstra's Algorithm.

UNIT - V: (10hrs)

Algorithm - Definition - Examples - Complexity - Divide and Conquer - Binary Search - Maximum and Minimum - Merge Sort.

1. Recommended Texts

1. E.Horowitz and S. Shani Fundamentals of Data Structures in C++, Galgotia Pub. 1999.

2.Reference Books

1. Horowitz, S. Sahni, and S. Rajasekaran, Computer Algorithms, Galgotia Pub. Pvt. Ltd., 1998.
2. R. Kruse C.L. Tondo and B. Leung, Data Structures and Program design in C, PHI, 1997.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE - VI Programming in C++

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 4

SEMESTER: III **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the basic concepts of C++ programming
- Acquire an understanding of basic object oriented concepts and the issues involved in effective class design
- In order to write C++ programs that use object oriented concepts such as information hiding, constructors, destructors, inheritance etc.

UNIT I (18hrs)

Principles of Object- Oriented Programming – Beginning with C++ - Tokens,Expressions and Control Structures – Functions in C++

UNIT II (18hrs)

Classes and Objects – Constructors and Destructors – New Operator – Operator Overloading andType Conversions

UNIT III (18hrs)

Inheritance: Extending Classes – Pointers- Virtual Functions and Polymorphism

UNIT IV (18hrs)

Managing Console I/O Operations – Working with Files – Templates – Exception Handling

UNIT V(18hrs)

Standard Template Library – Manipulating Strings – Object Oriented Systems Development

1. Recommended Texts

i. E. Balagurusamy,1995,Object Oriented Programming with C++, Tata McGraw-Hill Publishing Company Ltd.

2.Reference Books

i. Robert Lafore, Object Oriented Programming in Microsoft C++, Galgotia publication.
ii.. H.Schildt, C++,1998,The Complete Reference-1998-TMH Edition, 1998
iii. Barbara Johnston, C++ Programming today, Pearson education/Prentice-Hall of India,ISBN81-317-1079-3, 2007.
iv. Steve Oualline, Practical C++ programming, O'Reilly/Shroff publishers & distributors,ISBN81-7366-682-2.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE - VII Data Structures using C++ Lab

SUBJECT CODE:	PRACTICAL	MARKS :100

CREDIT: 4

SEMESTER: III **TOTAL HOURS:75**

COURSE OBJECTIVES

- This course deals with practical implementation of Data Structure using C++

1. Implement PUSH, POP operations of stack using Arrays.
2. Implement PUSH, POP operations of stack using Pointers.
3. Implement add, delete operations of a queue using Arrays.
4. Implement add, delete operations of a queue using Pointers.
5. Conversion of infix to postfix using stack operations
6. Postfix Expression Evaluation.
7. Addition of two polynomials using Arrays and Pointers.
8. Creation, insertion, and deletion in doubly linked list.
9. Binary tree traversals (in-order, pre-order, and post-order) using linked list.
10. Depth First Search and Breadth first Search for Graphs using Recursion.

CORE - VIII OPERATIONS RESEARCH

SUBJECT CODE:	THEORY	MARKS :100

CREDITS: 4

SEMESTER: III **TOTAL HOURS:90**

COURSE OBJECTIVES: To give an overall idea about the various Optimization techniques and their usages

UNIT – I :(18hrs)
Introduction to Operations Research - Linear Programming - Formulation - Graphical Solution - Simplex method.
Chapter 1,Section 1.1 to 1.4
Chapter 2, Section 2.1 to 2.28
Chapter 3, Section 3.1 to 3.54
Chapter 4, Section 4.1 to 4.31

UNIT II :(18hrs)
Big-M Method – Two-Phase method – Duality Dual-Primal relation – Dual Simplex Method.
Chapter 5, Section 5.1 to 5.14
Chapter 6, Section 3.1 to 6.35
Chapter 7, Section 7.1 to 7.37
Chapter 8, Section 8.1 to 8.35

UNIT – III :(18hrs)
Transportation Problem -- Assignment Problem.
Chapter 10, Section 10.1 to 10.73
Chapter 11, Section 11.1 to 11.6

UNIT – IV :(18hrs)
Sequencing problem , n jobs through 2 machines ,n jobs through 3 machines , 2 jobs through m machines , n jobs through m machines
Chapter 12, Section
Game theory : Two person – Zero game with saddle point – without saddle point – Dominance – solving 2 x n game or m x 2 game by graphical method
Chapter 15,

UNIT – V :(18hrs)
PERT – CPM : Project Network Diagram – Critical Path (Crashing excluded) – PERT computation
Chapter 14, Section 14.1 to 14.70

Content and treatment as in
Operations Research by P.R.Vittal and V.Malini

1. Recommended Texts

1. V.Sundaresan, K.S.Ganapathy Subramanian, K.Ganesan – Resource Management Techniques (Operations Research).
2. Introduction to Operations Research, P.R.Vittal
3. Gupta P.K. and HiraD.S.Problems in Operations Research, S.Chand& Co.

2.Reference Books

1.KantiSwaroop, Gupta P.K. and Manmohan – Problems in Operations Research, Sultan Chand & Sons.
2. Ravidran A., Philips,D.T. and Solberg J.J.,Operations Research, John Wiley & sons.
3.Taha H.A., Operations Research, Macmillian Publishing company, Newyork.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	2	1
	Unit – 5	2	1
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	1	1
	Unit – 4	1	1
	Unit – 5	1	1
C	Unit – 1	1	
	Unit – 2	1	1
	Unit – 3		1
	Unit – 4		1
	Unit - 5		1

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 5

SEMESTER: III **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the concepts of Financial Accounting.

Unit-1: (20hrs)
Meaning and scope of Accounting - Basic Accounting concepts and conversions Objectives of Accounting - Accounting transactions - Double entry book keeping Journal, Ledger, preparation of Trial Balance

Unit-2: (16hrs)
Preparation of Final accounts of sole trading Concerns

Unit-3: (18hrs)
Adjustments to final accounts of sole trading concern - Bank Reconciliation Statement (BRS)

Unit-4: (18hrs)
Depreciation Meaning, causes, types problems based on straight line and diminishing Balance methods.

Unit-5 : **(18hrs)**
Meaning, features, defects, Statement of Affairs method and conversion method. (Problems on Statement of Affairs method only)

1**.Recommended Texts & Reference**

1. Gupta R.L, Advanced Accountancy, S.Chand, Delhi.
2. Agarwala A.N, Higher Science of Accountancy, Kitab Mahal,Allahabad.
3. S.P. Jain and K.L. Narang, Financial Accounting
4. M.C.Shukla and T.S.Grawel, Adavnced Accounts(Vol. I)
5. Gillespie Accounting system, Procedure & methods, Prentice Hall India Ltd, New Delhi.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-24	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	2
	Unit – 2		2
	Unit – 3		2
	Unit – 4	1	1
	Unit – 5	1	1
B	Unit – 1	1	1
	Unit – 2		1
	Unit – 3	1	1
	Unit – 4		1
	Unit – 5	1	1
C	Unit – 1	1	
	Unit – 2		2
	Unit – 3		1
	Unit – 4		1
	Unit - 5		1

SOFT SKILL III - PERSONALITY ENRICHMENT

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 3

SEMESTER: III **TOTAL HOURS:30**

COURSE OBJECTIVES

- To make students understand the concepts and components of personality, thereby to apply the acquired knowledge to themselves and to march towards excellence I their respective academic careers.
- To enable students to keep themselves abreast of general knowledge and current information.
- To bring out creativity and other latent talents with proper goal setting so that self-esteem gets enhanced.
- To sharpen memory skills and other study skills which are vital for academic excellence.
- To give training for positive thinking which will keep the students in a good stead at the time of crisis.

Unit 1- Self Disclosure (6hrs)

Characteristics of self disclosure – Self disclosure benefits and appropriateness – Self disclosure
and self awareness – Self disclosure and feedback.

Exercise:

1. Self Description– Reflect and answer the following questions on a sheet of paper about yourself: Who am I? What am I like? How do others perceive me? What are my strengths as a
person? In what areas do I want to develop greater skills?
2. Adjective Checklist – the following exercise is aimed at providing an opportunity for participants to disclose their view of themselves to the other members of their group and to
receive feedback on how the other group members perceive them.
3. Self Disclosure and Self Awareness – the purpose of this exercise is to allow participants to
focus on the areas as described in the Johari Window.

Unit II – Anger, Stress and Managing Feelings (6hrs)

The nature of stress- managing stress through social support systems – the nature of anger –
guidelines for managing anger constructively – dealing with an angry person

Exercise:

1. Handling put downs techniques practiced through role plays.
2. changing your feelings discuss how people can make their assumptions more constructively.
3. defusing the Bomb exercise discuss how one can manage provocations.

Unit III – Interpersonal Effectiveness (6hrs)

Managing anxiety and fear – Breathing – an antidote to stress – progressive muscle relaxation – understanding your shyness – building one' self esteem – avoiding self blame – taking risks, tolerating failure, persisting and celebrating success – self talk.

Exercise:

1. being positive about yourself
2. Understanding your shyness analyze the social situation of shyness and the causes of your shyness.
3. Systematic Muscle Relaxation train one in the procedure for systematic muscle relaxation.
4. Learning how to breathe deeply help one to relax systematically when one is anxious by controlling one's breathing.

Unit IV: Study Skills (6hrs)

Importance of study environment – using VCR3 to increase memory power: visualizing, concentrating, relating, repeating, reviewing- memory hindrances – memory helpers – knowing vs memorizing – memory and studying – the SQ3R method; survey, write questions, read, recite , review – mnemonic devices – rhymes – acronyms – pegging – cooperative learning .

Exercise:

1. Using the techniques of memory enhancers to review your classroom and textbook notes

Unit V: Goal Setting and Managing Time (6hrs)

The basis of effective goals – steps to be followed to obtain optimum results from goal setting – Identifying the reasons for procrastination – guidelines to overcome procrastination – priority management at home and college

Exercise:

1. Steps to prepare one's short term goals and long term goals.
2. Role play activity through reelection of identifying how priority management affect one's ability to live a balanced life.

Reference:

1. Johnson, D.W. (1997). Reaching out – Interpersonal Effectiveness and Self Actualization. 6th ed. Boston: Allyn and Bacon.
2. Sherfield, R. M. ; Montgomery, R.J. and Moody, P, G. (2010). Developing Soft Skills. 4th ed. New Delhi: Pearson.
3. Robbins, S. P. and Hunsaker, Phillip, L. (2009). Training in Interpersonal skills. Tips for managing people at work. 5th ed. New Delhi: PHI Learning.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Essay** Answer any 5 out of 10 questions **(each in 1200 words)**	1-10	20	**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	

CORE - IX Java Programming

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 4

SEMESTER: IV **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the concepts of Programming in JAVA.
- To understand Object oriented concepts like data abstraction, encapsulation, etc.
- To solve the real world scenarios using top down approach.
- To understand various Java programming concepts.

UNIT I (14hrs)
Introduction to Java – Features of Java – Object Oriented Concepts - Lexical Issues - Data Types - Variables Arrays – Operators - Control Statements.

UNIT II (22hrs)
Classes – Objects – Constructors - Overloading method – Access control - Static and fixed methods - Inner class - string Class – Inheritance - Overriding Methods - Using super - Abstract class.

UNIT III (22hrs)
Packages Access Protection - Importing packages – Interfaces - Exception Handling - Throw and Throws – Thread – Synchronization – Messaging - Runnable Interface - Inter thread Communication – Deadlock - Suspending, Resuming and stopping threads Multithreading.

UNIT IV (14hrs)
I/O streams – File streams – Applets - String Objects - String Buffer - Char Array - Java utilities - Code Documentation.

UNIT V (18hrs)
Networks basics – Socket programming – Proxy Server - TCP/IP Sockets - Net Address – URL - Data grams - Working with windows using AWT Classes - AWT Controls - Layout Managers and Menus.

1. Recommended Texts

i. P. Naughton and H.schildt - Java2 (The complete Reference) - Third edition, TMH 1999.

ii. Cay S. Horstmann, Gary cornel l - Core Java 2 Volume I – Fundamentals, 5th Edn, PHI, 2000.

2. Reference Books

i .K. Arnold and J. Gosling - The Java Programming Language - Second Edition, Addison Wesley, 1996.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 1200 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE - X Computer Architecture

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 4

SEMESTER: V **TOTAL HOURS:120**

COURSE OBJECTIVES

- These courses introduce the Basic components of Computer and explain their function.
- To conceptualize the basics of organizational and architectural issues of a digital Computer.
- To analyze performance issues in processor and memory design of a digital Computer.
- To understand various data transfer techniques in digital computer.
- To analyze processor performance improvement using instruction level parallelism

UNIT I (24hrs)
Digital logic circuits: Digital computers – Logic Gates – Boolean Algebra – Combinational circuits and Flip Flops – Sequential Circuits.

UNIT II (24hrs)
Digital components: Integrated Circuits - Decoders – Multiplexers – Registers and Counters – Memory Unit.

UNIT III (24hrs)
Data representation: Data Types – Complements – Fixed point & Floating point representation – Binary Codes - Error Detection Codes.

UNIT IV (24hrs)
Register Transfer – Bus and Memory Transfer – Arithmetic, Logic & Shift Micro operations - Arithmetic Logic Shift Unit.

UNIT V (24hrs)
Central Processing Unit: General Register Organization – Stack organization – Instruction formats – Addressing modes –Program Control - Reduced Instruction Set Computing (RISC).

1. Recommended Texts

i. Computer System Architecture: M.Morris Mano , ThirdEdition, Prentice Hall of India.

2. Reference Book:

i. Computer Organization and Programming – C.W. Gean

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE - XI Practical - JAVA Programming Lab

SUBJECT CODE:	PRACTICAL	MARKS :100

CREDIT: 4

SEMESTER: IV **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course gives hands on training in JAVA.

Application

1. To read student marks for five subjects and print the total and average.
2. Finding the largest among three numbers.
3. To implement the concept of method overloading.
4. To convert the given temperature in Fahrenheit to Celsius using the formula, C = F – 32/1.8.
5. To find the factorial of the given number.
6. To compute Simple and Compound Interest.
7. To check whether the given number is Prime or not.
8. To check whether the given number is Armstrong or not.
9. To print Fibonacci series.
10. To check whether the given string is Palindrome or not.
11. Substring Removal from a String. Use String Buffer Class.
12. Finding area and Perimeter of Triangle. Use Stream class.(Circle & Rectangle)
13. Determining the order of numbers generated randomly using Random class.
14. String Manipulation using Char Array.

Applets

15. Incorporating Graphics.
16. Working with Colors and Fonts.

ALLIED – IV COST AND MANAGEMENT ACCOUNTING

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 5

SEMESTER: IV **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the concepts of Cost and Management Accounting

Unit-1: (15hrs)

Cost Accounting: Definition, Meaning and objectives - Distinction between Cost and Financial Accounting. Elements of cost and preparation of cost sheets and tender. Management Accounting – Definition and objectives – Distinction between management and financial accounting.

Unit-2: **(18hrs)**

Stores Records - Purchase Order - Goods Received. Note - Bin Card - Stores Ledger - Purchase, Receipt and Inspection - Inventory Control - ABC Analysis - Economic Ordering Quantity - Maximum, Minimum and Reordering levels - Methods of Pricing Issued.

Unit-3: (18hrs)

Overheads: Factory, Administration, Selling and Distribution of Overheads - Classification - Allocation and Apportionment-Redistribution (Secondary Distribution) - Absorption of Over heads including 'Machine Hour Rate

Unit-4: (21hrs)

Funds Flow and Cash Flow Analysis**:** Schedule of changes in working capital - Preparation of 'funds flow statement'-Preparation of 'Cash Flow Statement' - Importance of funds flow and cash flow Analysis - Difference between funds flow and cash flow.

Unit-5: **(18hrs)**

Marginal Costing: The Concept - Break Even Analysis - Break - Even Chart - Importance and assumptions - Application of Profit Volumes Ratio - Different types of problems (with special emphasis on decision making problems).

1.Recommended Texts & Reference

1. Wheldon A.J., Cost Accounting and Costing Methods.
2. Iyengar S.P., Cost Accounting : Principles and Practice.
3. Bhar B.K., Cost Accounting : Methods and problems.
4. Bigg W.W., Cost Accounts.
5. Prasad N.K, Cost Accounting : Principles and Problems.
6. Jain S.P. and Narang K.L., Advanced Cost Accounting.
7. Agarwal M., Theory and Practices of Cost Accounting
8. Robert Anthony : Management Accounting : Text and cases.
9. Maheswari S.N., Principles of Management Accounting.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1		2
	Unit – 2		2
	Unit – 3		2
	Unit – 4	1	2
	Unit – 5	1	2
B	Unit – 1	1	1
	Unit – 2		1
	Unit – 3	1	1
	Unit – 4		1
	Unit – 5	1	1
C	Unit – 1		1
	Unit – 2		1
	Unit – 3		1
	Unit – 4		2
	Unit - 5		1

SOFT SKILL IV – FLASH Lab

SUBJECT CODE:	PRACTICAL	MARKS :100

CREDIT: 3

SEMESTER: IV **TOTAL HOURS:30**

COURSE OBJECTIVES

- Practical exercises based on concepts listed in theory using Flash.

FLASH: Concept of Frame, Key frames, Frame rate, Timeline, Tween, Layers, Symbols, Embedding audio/video and embedding on the web page

1. Draw an animation to show a bouncing ball.
2. Draw an animation to show a moving stick man.
3. Draw an animation to show a fainting banana.
4. Draw an animation to show sunrise and sunset.
5. Draw an animation to show a disappearing house.
6. Draw an animation to show two boats sailing in river
7. Draw an animation to show a scene of cricket match.
8. Draw an animation to help teach a poem or a song
9. Draw an animation to show cartoon with a message
10. Make a movie showing Shape Tweening.
11. Make a movie showing Motion Tweening.
12. Add sound and button to the movie

`

EVS - ENVIRONMENTAL STUDIES

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 2

SEMESTER: III **TOTAL HOURS:30**

COURSE OBJECTIVES

- This course introduces the concepts of Environmental Studies

Unit-1: (6hrs)
Multidisciplinary nature of environmental studies
Definition, scope and importance.

Unit-2: **(6hrs)**
Natural Resources : Renewable and non-renewable resources :
Natural resources and associated problems. - Forest resources : Use and over-exploitation, deforestation, case studies. -Timber extraction, mining, dams and their effects on forest and tribal people. - Water resources : Use and over-utilization of surface and ground water - floods, drought, conflicts over water, dams-benefits and problems. - Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies. Land resources : Land as a resource, land degradation, man induced
landslides, soil erosion and desertification. Role of an individual in conservation of natural resources.
Equitable use of resoureces for sustainable lifestyles.

Unit-3: (6hrs)
Ecosystems - Concept of an ecosystem. -Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem. - Ecological succession. - Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of the
following ecosystem :- . Forest ecosystem, Grassland ecosystem ,. Desert ecosystem,. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit-4: (6hrs)
Biodiversity and its conservation
• Introduction – Definition : genetic, species and ecosystem diversity. - Biogeographical classification of India - Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic- and option values - Biodiversity at global, National and local levels. - Inida as a mega-diversity nation - Hot-sports of biodiversity.
• Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
• Endangered and endemic species of India
• Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Unit-5 : **(6hrs)**

Environmental Pollution

Definition

• Cause, effects and control measures of :-

a. Air pollution

b. Water pollution

c. Soil pollution

d. Marine pollution

e. Noise pollution

f. Thermal pollution

g. Nuclear hazards

• Solid waste Management : Causes, effects and control measures of urban and industrial wastes.

• Role of an individual in prevention of pollution.

• Pollution case studies.

• Diaster management : floods, earthquake, cyclone and landslides.

Recommended Texts

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.

Reference Books

1. Cunningham, W.P.Cooper, T.H. Gorhani, E & Hepworth, M.T.2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE – XII Database Management System

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 4

SEMESTER: V **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the concepts of Database Management System. learn and practice data modeling using the entity-relationship and developing database designs.
- Understand the use of Structured Query Language (SQL) and learn SQL syntax.
- Apply normalization techniques to normalize the database
- Understand the needs of database processing and learn techniques for controlling the consequences of concurrent data access

UNIT I (18hrs)

Introduction: Database-System Applications- Purpose of Database Systems - View of Data-- Database Languages - Relational Databases - Database Design -Object-Based and Semistructured Databases - Data Storage and Querying Transaction Management -Data Mining and Analysis - Database Architecture - Database Users and Administrators - History of Database Systems.

UNIT II (16hrs)

Relational Model: Structure of Relational Databases - Fundamental Relational-Algebra Operations Additional Relational-Algebra Operations- Extended Relational-Algebra Operations - Null Values - Modification of the Database.

UNIT III (16hrs)

SQL: Data Definition - Basic Structure of SQL Queries – Set Operations – Aggregate Functions – Null Values - Nested Subqueries - Complex Queries - Views -Modification of the Database - Joined Relations - SQL Data Types and Schemas - Integrity Constraints -Authorization - Embedded SQL

UNIT IV (20hrs)

Relational Languages: The Tuple Relational Calculus - The Domain Relational Calculus - Query-by- Example. Database Design and the E-R Model: Overview of the Design Process - The Entity-Relationship Model - 3 Constraints - Entity-Relationship Diagrams - Entity- Relationship Design Issues - Weak Entity Sets - Database Design for Banking Enterprise

UNIT V (20hrs)

Relational Database Design: Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition Using Functional Dependencies - Functional-Dependency Theory - Decomposition Using Functional Dependencies - Decomposition Using Multivalued Dependencies-More Normal Forms - Database-Design Process

1. Recommended Texts

i. Database System Concepts, Fifth edition, Abraham Silberschatz , Henry F. Korth, S. Sudarshan, McGraw-Hill-2005.

2. Reference Books

i An introduction to database systems", Bipin C. Desai, Galgotia Publications Pvt Ltd, 1991.

ii . An Introduction to Database Systems", C.J. Date, Third Edition Addison Wesley 1983.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE – XIII Operating Systems

SUBJECT CODE:	THEORY	MARKS :100

CREDIT: 4

SEMESTER: IV **TOTAL HOURS:90**

COURSE OBJECTIVES

- To provide core knowledge of Operating Systems features, functions and techniques. Each and every Operating System function is discussed in detailed. This course also provides an attempt to throw some light on the advanced topics in O/S like Multiprocessors systems and Distributed O/S. Case studies of WINDOWS and LINUX are organized at the end of this course so as to provide the support whatever they had pursued theoretically.
- To gain knowledge about operating system, memory management and scheduling concepts and to study about the basics of OS, process management, synchronization, memory management and File management.

UNIT I: (18hrs)

Introduction: Views –Goals –Types of system – OS Structure –Components – Services - System Structures – Layered Approach -Virtual Machines - System Design and Implementation. Process Management: Process - Process Scheduling – Cooperating Process –Threads - Interprocess Communication. CPU Scheduling : CPU Schedulers – Scheduling criteria – Scheduling Algorithms

UNIT II (20hrs)

Process Synchronization: Critical-Section problem - Synchronization Hardware – Semaphores – Classic Problems of Synchronization – Critical Region – Monitors. Deadlock : Characterization – Methods for handling Deadlocks – Prevention, Avoidance, and Detection of Deadlock - Recovery from deadlock.

UNIT III (16hrs)

Memory Management : Address Binding – Dynamic Loading and Linking – Overlays – Logical and Physical Address Space - Contiguous Allocation – Internal & External Fragmentation . Non Contiguous Allocation: Paging and Segmentation schemes – Implementation – Hardware Protection – Sharing - Fragmentation

UNIT IV (18hrs)

Virtual Memory **:**: Demand Paging – Page Replacement - Page Replacement Algorithms – Thrashing. – File System: Concepts – Access methods – Directory Structure –Protection Consistency Semantics – File System Structures – Allocation methods – Free Space Management.

UNIT V (18hrs)

I/O Systems: Overview - I/O Hardware – Application I/O Interface – Kernel I/O subsystem – Transforming I/O Requests to Hardware Operations – Performance. Secondary Storage Structures : Protection – Goals- Domain Access matrix – The security problem – Authentication – Threats – Threat Monitoring – Encryption..

1. **Recommended Text*s**

   1. Silberschatz A., Galvin P.B., Gange., 2002, Operating System Principles ,Sixth Edition, John Wiley & Sons.

2. **Reference Books**

   1. H.M. Deitel ,1990, An Introduction to Operating System,- Second Edition, Addison Wesley.
   2. Andrew S.Tanenbaum, Modern Operating Systems, Pearson Education, II Ed.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE – XIV Practical - RDBMS Lab

SUBJECT CODE:	PRACTICAL	MARKS : 100

CREDIT: 4

SEMESTER: V **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course gives hands on training in RDBMS.
- Creating database objects, modifying database objects, manipulating the data, retrieving the data from the database server
- Performing database operations in a procedural manner using pl/sql
- Performing database operations (create, update, modify, retrieve, etc.,) using front-end tools like D2K.
- Design and Develop applications like banking, payroll system, etc.,

Create database and performing the operations given below using a menu driven Program: Insertion, (b) Deletion, (c) Modification, (d) Generating a reports (Simple) For the following systems using Visual Basic as frontend and Oracle 8.0 as Backend

1. Pay roll
2. Mark sheet Processing
3. Savings bank account for banking
4. Inventory system
5. Invoice system
6. Library information system
7. Student information system
8. Income tax processing system
9. Electricity bill preparation system
10. Telephone directory maintenance.

Elective - I
1. Visual Programming

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: V **TOTAL HOURS:90**

COURSE OBJECTIVES

- To introduce knowledge on Visual Basic concepts and Programming.

UNIT I (18hrs)
Customizing a Form - Writing Simple Programs - Toolbox - Creating Controls - Name Property - Command Button - Access Keys - Image Controls - Text Boxes - Labels - Message Boxes - Grid - Editing Tools - Variables - Data Types - String – Numbers

UNIT II (18hrs)
Displaying Information - Determinate Loops - Indeterminate Loops - Conditionals - Built-in Functions - Functions and Procedures

UNIT III (18hrs)
Lists - Arrays - Sorting and Searching - Records - Control Arrays - Combo Boxes - Grid Control - Projects with Multiple forms - DoEvents and Sub Main - Error Trapping

UNIT IV (18hrs)
VB Objects - Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization - Working with Graphics

UNIT V (18hrs)
Monitoring Mouse activity - File Handling - File System Controls - File System Objects - COM/OLE - automation - DLL Servers - OLE Drag and Drop.

1. Recommended Texts

1. Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill - 1999.
2. Noel Jerke - Visual Basic 6 (The Complete Reference) - Tata McGraw Hill – 1999

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

Elective – II
1. IDE - Multimedia Systems

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: V **TOTAL HOURS:75**

COURSE OBJECTIVE :

- This course gives an exposure to Multimedia and its applications

Unit-1: (15hrs)

What is Multimedia**:** Definitions - CD-ROM and the Multimedia Highway - Where to use Multimedia - Introduction to Making Multimedia: The stages of a Project - What You Need - Multimedia Skills and Training**:** The team - Macintosh and Windows Production Platforms**:** Macintosh Versus PC - The Macintosh Platform - The Windows Multimedia PC Platform - Networking Macintosh and Windows Computers- Hardware Peripherals**:** Connection - Memory and Storage Devices - Input Devices - Output Hardware - Communication Devices.

Unit-2: (15hrs)

Basic Tools**:** Text Editing and Word Processing Tools - OCR Software - Painting and Drawing Tools - 3-D Modeling and Animation Tools - Image-Editing Tools - Sound Editing Tools - Animation, Video and Digital Movie Tools - Helpful Accessories - Making Instant Multimedia: Linking Multimedia Objects - Office Suites - Word Processors - Spreadsheets - Databases - Presentation Tools**.** Multimedia Authoring Tools: Types of Authoring Tools - Card-and-Page-Based Authoring Tools - Icon-Based Authoring Tools - Time-Based Authoring Tools - Object-Oriented Authoring Tools - Cross-Platform Authoring Notes

Unit-3: (15hrs)

Text: The Power of Meaning - About Fonts and Faces - Using Text in Multimedia - Computers and Text - Font Editing and Design Tools - Hypermedia and Hypertext - Sound**:** The Power of Sound - Multimedia System Sounds - MIDI Versus Digital Audio - Digital Audio - Making MIDI Audio - Audio File Formats - Working with Sound on the Macintosh - Notation Interchange File Format (NIFF) - Adding Sound to Your Multimedia Project - Toward Professional Sound: The Red Book Standard - Production Tips

Unit-4: (15hrs)

Images: Making Still Images -Color - Image File Formats. Animation: The Power of Motion - Principles of Animation - Making Animations That Work - Video**:** Using Video - How Video works - Broadcast Video Standards - Integrating Computers and Television - Shooting and Editing Video - Video Tips - Recording Formats - Digital Video.

Unit-5: (15hrs)

Planning and Costing **:** Project Planning - Estimating - RFPs and Bid Proposals **-** Designing and Producing **:** Designing - Producing - Content and Talent **:** Acquiring Content - Using Content Created by Others - Using Content Created for a Project - Using Talent - Delivering **:** Testing - Preparing for Delivery - Delivering on CD-ROM - Compact Disc Technology - Wrapping It Up - Delivering on the World Wide Web.

Recommended Texts:

1. Tay Vaughan - Multimedia: Making it Work. - Fourth Edition - Tata McGraw Hill Edition - 1999.
2. Walterworth John A - Multimedia Technologies and Application - Ellis Horwood Ltd. - London - 1991.
3. John F Koegel Buford - Multimedia Systems - Addison Wesley - First Indian Reprint - 2000.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

Value Education

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 2

SEMESTER: V **TOTAL HOURS:15**

COURSE OBJECTIVE:

- Values are socially accepted norms to evaluate objects, persons, and situations that form part and parcel of sociality.
- A value system is a set of consistent values and measures. Knowledge of the values is inculcated through education. It contributes in forming true human being, who is able to face life and make it meaningful. There are different kinds of values like, ethical or moral values, doctrinal or ideological values, social values and aesthetic values. Values can be defined as broad preferences concerning appropriate courses of action or outcomes. As such, values reflect a person's sense of right and wrong or what "ought" to be. There are representative values like, "Equal rights for all", "Excellence deserves admiration". "People should be treated with respect and dignity". Values tend to influence attitudes and behavior and help to solve common human problems. Values are related to the norms of a culture..

Unit I: (3hrs)

Value education-its purpose and significance in the present world – Value system – The role of culture and civilization-Holistic living – Balancing the outer and inner – Body, Mind and Intellectual level- Duties and responsibilities.

Unit II : (3hrs)

Salient values for life- Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity , and inclusiveness, Self esteem and self confidence, punctuality – Time, task and resource management – Problem solving and decision making skills- Interpersonal and Intra personal relationship – Team work – Positive and creative thinking

Unit III : (3hrs)

Human Rights – Universal Declaration of Human Rights – Human Rights violations – National Integration – Peace and non-Violence – Dr. A P J Kalam's ten points for enlightened citizenship – Social Values and Welfare of the citizen – The role of media in value building.

Unit IV: (3hrs)

Environment and Ecological balance – interdependence of all beings – living and non-living. The binding of man and nature – Environment conservation and enrichment.

Unit V : (3hrs)

Social Evils – Corruption, Cyber crime, Terrorism – Alcoholism, Drug addiction – Dowry – Domestic violence – untouchability – female infanticide – atrocities against women- How to tackle them

Books for Reference:

1. M.G.Chitakra: Education and Human Values,
A.P.H.Publishing Corporation, New Delhi, 2003

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Essay** Answer any 5 out of 10 questions **(each in 1200 words)**	1-10	20	**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	

CORE – XV PHP Scripting Language

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 4

SEMESTER: VI **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the basic concepts of PHP Scripting Language.
- To develop web applications using basic PHP elements such as delimiters, control structures, operators, variables, arrays, and functions.
- To manipulate dates and strings using built-in PHP functions and regular expressions.
- To debug and improve code for better reusability and scalability.
- To create dynamic web forms using internet tools such as input , environment, and server variables, HTTP headers, and query strings.
- To read, write, manage, and download files through PHP-based web applications.
- To track user information using cookies and sessions.
- To build a full-fledged shopping cart system.

UNIT I (18hrs)
Essentials of PHP - Operators and Flow Control - Strings and Arrays.

UNIT II (18hrs)
Creating Functions - Reading Data in Web Pages - PHP Browser – Handling Power.

UNIT III (18hrs)
Object-Oriented Programming –Advanced Object-Oriented Programming .

UNIT IV (18hrs)
File Handling –Working with Databases – Sessions, Cookies, and FTP.

UNIT V (18hrs)
Ajax – Advanced Ajax – Drawing Images on the Server.

1. Recommended Texts

i. The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition.

2. Reference Books

i. Spring into PHP5 – Steven Holzer, Tata McCraw Hill Edition.
ii. Ajax Bible- Steven Holzer , Tata McCraw Hill Edition.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE – XVI Software Engineering

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 4

SEMESTER: VI **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the concepts of Software Engineering And Testing.
- To explain the background of the software crisis and the need for an engineering approach
- To appreciate the distinction between software programming and an engineering approach to the development of a software product
- To create models of software data and processes using object oriented modelling approaches such as the UML
- To describe and evaluate software tools and technology to enhance productivity and quality of software development
- To demonstrate skills of software documentation, quality assurance and evaluation, and testing as part of software development
- To describe development contexts and be able to apply estimation methods for planning these contexts

UNIT I (18hrs)

Introduction: Definition of software and software engineering – Software myths – Software Engineering paradigms: Linear Sequential Model & Prototyping Model Software Project Management – Software Metrics – Software Cost Estimation – Software Project Planning.

UNIT II (18hrs)

Software Requirement Analysis: Software Risks – Software Configuration Management System Analysis – Modeling the System Architecture – System Specification – Fundamentals of Requirement Analysis – Software Prototyping – Prototyping method sand tools specification – Software requirements Specifications

UNIT III (18hrs)

Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing – Challenges in White-Box Testing.

UNIT IV (18hrs)

Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase Testing – Scenario Testing – Defect Bash.

UNIT V (18hrs)

System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing – Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

1. Recommended Texts

i. Roger S. Pressman, Software Engineering – A Practioner's Approach, McGraw Hill, 4th Edition

ii. Software Testing Principles and Practices – Srinivasan Desikan & Gopalswamy Ramesh,2006, Pearson Education.

2. Reference Books

i . Richard Fairley , Software Engineering – Design Reliability and Management

ii. Renu Rajani , Pradeep Oak –" Software Testing - Effective Methods , Tools & Techniques " –Tata McGraw Hill

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE – XVII Computer Networks

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 4

SEMESTER: VI **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the basic concepts of Computer Networks.
- To be familiar with the basics of data communication.
- To be familiar with the basics of Computer networks and working of Internet.
- To be familiar with various types of computer networks.
- To have experience in designing communication protocols.
- To be exposed to the TCP/IP protocol suite.
- To understand the working of Packet Switched network (PSN).
- To be familiar with Windows and UNIX networking style

UNIT I (15hrs)
Introduction: Uses of Computer Networks - Network Hardware - Network Software – Reference Models - Example Networks.

UNIT II (15hrs)
The Physical Layer: Guided Transmission Media - Wireless Transmission – Communication Satellites - The Public Switched Telephone Network.

UNIT III (20hrs)
The Data Link Layer: Data Link Layer Design Issues - Error Detection And Correction - Elementary Data Link Protocols - Sliding Window Protocols.

UNIT IV (20hrs)
The Network Layer: Network Layer Design Issues - Routing Algorithms - Congestion Control Algorithms- Quality Of Service – Internetworking.

UNIT V (20hrs)
The Transport Layer: The Transport Service (6.1.1,6.1.2,6.1.3)- The Application Layer: DNS-- Domain Name System - Electronic Mail - The World Wide Web (7.3.1)

1. Recommended Texts

i. Computer Network , Fourth edition, Andrew S. Tanenbaum, Prentice Hall, 2006.

2. Reference Books

i. Data Communications & Computer Networks, Prakesh C. Gupta Prentice-Hall of India, 2006.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

CORE - XVIII Mini Project

SUBJECT CODE:	MINI PROJECT	MARKS : 100

CREDIT: 4

SEMESTER: VI **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course gives procedure and training about project development by using recent trends in Computer Applications.
  Each student will develop and implement individually application software based on any emerging latest technologies.
  The project work constitutes a major component in most of the professional programs and it is to be carried out with due care and should be executed with seriousness by the students. The objective of the project is to motivate them to work in emerging / latest technologies, help the student to develop ability to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories, this project will helps the student make ease and provides enough experience to carry our the larger project in the sixth semester. You will receive a block containing the guidelines for the mini project along with the list of project specifications, category-wise.

Elective – III
1. Cloud Computing

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: VI **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the basic concepts of cloud computing.
- To understand the emerging area of "cloud computing" and how it relates to traditional models of computing.
- To gain competence in MapReduce as a programming model for distributed processing of large datasets. Specifically:
    - To understand and be able to articulate key concepts behind MapReduce, including its functional abstraction, the use of distributed storage, and the scheduling of data-local jobs.
    - To understand how well-known algorithms such as PageRank and inverted index construction can be expressed in the MapReduce framework.

UNIT I (18hrs)

Fundamentals – Cloud computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Why cloud computing Matters – Advantages of Cloud computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services

UNIT II (18hrs)

Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2- Google App Engine – IBM Clouds.

UNIT III (16hrs)

Centralizing Email communications – collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation.

UNIT IV (20hrs)

Collaborating on Calendars, Schedules and Task Management – Exploring Online scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing – Collaborating on Databases – Storing and Sharing Files – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis.

UNIT V (18hrs)

OGSA – Sample Use Cases – OGSA Platform Components – OGSI – OGSA Basic Services. Globus Toolkit – Architecture – Programming Model – High Level Services – OGSI.Net. Middleware Solutions.

1.Recommended Texts

i. Michael Miller, Cloud Computing : Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.

2. Reference Books

i. Haley Bear, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs.

Question Paper Pattern:

Section	Question Component	Numbers	Marks	Total
A	**Definition/Principle** Answer any 10 out of 12 questions (each in 50 words)	1-12	3	**30**
B	**Short Answer** Answer any 5 out of 8 questions (each in 300 words)	13-20	6	**30**
C	**Essay** Answer any 4 out of 6 questions (each in 600 words)	21-26	10	**40**
TOTAL MARKS				**100**

Distribution of Questions:

Section	Units	No. of Questions	
		Theory	Problems
A	Unit – 1	2	
	Unit – 2	2	
	Unit – 3	2	
	Unit – 4	3	
	Unit – 5	3	
B	Unit – 1	1	
	Unit – 2	1	
	Unit – 3	2	
	Unit – 4	2	
	Unit – 5	2	
C	Unit – 1	1	
	Unit – 2	2	
	Unit – 3	1	
	Unit – 4	1	
	Unit - 5	1	

ANNEXURE

ELECTIVE – I
2. UNIX PROGRAMMING

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: V **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces fundamentals & programming of Unix basic concepts

Unit-I (18hrs)

INTRODUCTION: File and common commands - Shell - More about files - Directories- Unix system - Basics of file Directories and filenames - Permissions - modes - Directory hierarchy - Devices - the grep family - Other filters - the stream editor sed - the awk pattern scanning and processing language - files and good filters.

Unit-II (20hrs)

CONCEPTS OF SHELL: Command line structure - Metacharacters - Creating new commands - Command arguments and parameters - program output as arguments - Shell variables - More on I/O redirection - loop in shell programs - Bundle - Setting shell attributes, Shift command line parameters - Exiting a command or the shell, evaluating arguments - Executing command without invoking a new process - Trapping exit codes -- Conditional expressions.

Unit-III (16hrs)

SHELL PROGRAMMING: Customizing the cal command, Functions of command, While and Until loops - Traps - Catching interrupts - Replacing a file - Overwrite - Zap - Pick command - News command - Get and Put tracking file changes.

Unit-IV (16hrs)

FEATURES IN UNIX: Standard input and output - Program arguments - file access - A screen at a time printer - On bugs and debugging - Examples - Zap - pick - Interactive file comparison program - Accessing the environment - Unix system calls - Low level I/O, File system Directories and modes, Processors, Signal and Interrupts

Unit-V (20hrs)

PROGRAM DEVELOPMENT AND DOCUMENT PREPARATION:Program development - Four function calculator - Variables and error recovery - Arbitrary variable names, Built in functions, Compilation into a machine, Control flow and relational operators, Functions and procedures - Performance evaluation - Ms macro package - Troff level - Tbl and eqn preprocessors - Manual page - Other document preparation.

1.Recommended Texts

1. Brian W. Kernighan, Rob Pike - The UNIX Programming Environment - Prentice Hall of India(1984).

2. **Reference Books**

1. Steven Earhart - The UNIX System for MSDOS Users - Galgotia book source P. Ltd. (1990).
2. Stefen Prata - Advanced UNIX - A Programmer Guide.

ELECTIVE – I
3. DATA MINING

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: V **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the fundamental concepts of Data Mining.

Unit-I (16hrs)

Introduction: Data mining – Functionalities – Classification – Introduction to Data Warehousing – Data Preprocessing : Preprocessing the Data – Data cleaning – Data Integration and Transformation – Data Reduction

Unit-II (20hrs)

Data Mining, Primitives, Languages and System Architecture:
Data Mining – Primitives – Data Mining Query Language,. Architectures of Data mining Systems. Concept Description, Characterization and Comparison: Concept Description, Data Generalization and Summarization, Analytical Characterization, Mining Class Comparison – Statistical Measures.

Unit-III (18hrs)

Mining Association Rules: Basics Concepts – Single Dimensional Boolean Association Rules From Transaction Databases, Multilevel Association Rules from transaction databases – Multi dimension Association Rules from Relational Database and Data Warehouses.

Unit-IV (18hrs)

Classification and Prediction: Introduction – Issues – Decision Tree Induction – Bayesian Classification – Classification of Back Propagation. Classification based on Concepts from Association Rule Mining – Other Methods. Prediction – Introduction – Classifier Accuracy.

Unit-V (18hrs)

Cluster Analysis: Introduction – Types of Data in Cluster Analysis, Petitioning Methods – Hierarchical Methods Density Based Methods – GRID Based Method – Model based Clustering Method.

1. Recommended Texts

i.J.Han and M. Kamber,2001,Data Mining Concepts and Techniques,Harcourt India Pvt. Ltd - New Delhi.

2. Reference Books

i. K.P. Soman , Shyam Diwakar, V.Ajay ,2006, Insight into Data Mining Theory and Practice, Prentice Hall of India Pvt. Ltd - New Delhi.

ELECTIVE – II
2. E-COMMERCE

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: V **TOTAL HOURS:75**

COURSE OBJECTIVES

- This course gives an exposure to the Electronic Commerce

Unit-I (15hrs)

Electronic Commerce and Opportunities : Background The Electronic Commerce Environment – Electronic Marketplace Technologies – Modes of Electronic Commerce: Overview : Electronic Data Interchange.

Unit-II (15hrs)

Approaches to Safe Electronic Commerce . Overview – Secure Transport Protocols – Secure Transaction – Secure Electronic Payment Protocol (SEPP) – Secure Electronic Transaction (SET)

Unit-III (15hrs)

Certificates for Authentication – Security on Web Servers – Payment Schemes: Internet Monetary Payment and Security Requirements- Payment and purchase order process – Online electronic cash.

Unit-IV (15hrs)

Internet / Intranet Security Issues and Solutions : The Need for Computer Security – Specific Intruder Approaches – Security Strategies-Security Tools – Encryption – Enterprise Networking and Access to the Internet Antivirus Programs.- Security Teams

Unit-V (15hrs)

MasterCard/Visa Secure Electronic Transaction : Introduction –Business Requirements – Concepts – payment Processing. E-mail and secure e-mail technologies for Electronic Commerce: Introduction _ The Means of Distribution – A model for Message Handling- MIME, S/MIME, MOSS , MIME and Related Facilities for EDI over the Internet.

Recommended Texts:

Daniel Minoli & Emma Minoli, "Web Commerce Technology Handbook". Tata McGraw Hill – 1999.

Reference Book:

1.K.Bajaj & D Nag , "E-Commerce", Tata McGraw Hill – 1999.
2.Mamta Bhusry – "E-Commerce"

ELECTIVE – II
3. CLIENT / SERVER COMPUTING

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: V **TOTAL HOURS:75**

COURSE OBJECTIVES

- This Subject deals with the C/S Computing, GUI.

Unit-I (15hrs)

Introduction to Client/Server Computing – What is Client/Server Computing – Benefits of Client/Server Computing – Evolution of C/S Computing – Hardware Trends – Software Trends-Evolution of Operating Systems – N/w Trends – Business Considerations.

Unit-II (15hrs)

Overview of C/S Applications: Components of C/S Applications – Classes of C/S Applications – Categories of C/S Applications . Understanding C/S Computing : Dispelling the Myths – Obstacies – Upfront & Hidden – Open Systems & Standards – Standards – Setting Organizations – Factors of Success.

Unit-III (15hrs)

The Client Hardware & Software : Client Component – Client Operating Systems – What is GUI – Database Access – Client Software Products : GUI Environments – Converting 3270/5250 Screens – Database Tools – Client Requirements : GUI Design Standards – Open GUI Standards – Interface Independence – Testing Interfaces .

Unit-IV (15hrs)

The Server : Categories of Servers – Features of Server Machines – Classes of Server Machines – Server Environment : N/W Management Environment – N/W Computing Environment – Extensions – Network Operating System – Loadable Module.

Unit-V (15hrs)

Server Operating System : OS/2 2.0 – Windows New Technology – Unix Based OS – Server Requirements : Platform Independence – Transaction Processing – Connectivity – Intelligent Database – Stored Procedure – Triggers – Load Leveling – Optimizer – Testing and Diagnostic Tools – Backup & Recovery Mechanisms.

Recommended Texts

1.Patrick Smith & Steave Guengerich, “Client/Server Computing”. PHI

2. Dawna Travis Devire, “Client/Server Computing”. TMH

ELECTIVE – III
2. SOFTWARE TESTING

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: VI **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the basic concepts of software testing

Unit-I (18hrs)
Introduction: Purpose – Productivity and Quality in Software – Testing Vs Debugging – Model for Testing – Bugs – Types of Bugs – Testing and Design Style.
Unit-II (18hrs)
Flow/Graphs and Path Testing – Achievable paths – Path instrumentation – Application – Transaction Flow Testing Techniques
Unit-III (18hrs)
Data Flow Testing Strategies - Domain Testing: Domains and Paths – Domains and Interface Testing .
Unit-IV (18hrs)
Linguistic –Metrics – Structural Metric – Path Products and Path Expressions. Syntax Testing – Formats – Test Cases .
Unit-V (18hrs)
Logic Based Testing – Decision Tables – Transition Testing – States, State Graph, State Testing.

1. Recommended Texts

B. Beizer , 2003, Software Testing Techniques, II Edn., DreamTech India, New Delhi.
K.V.KK. Prasad , 2005, Software Testing Tools, DreamTech. India, New Delhi.

2. Reference Books

I. Burnstein, 2003, Practical Software Testing, Springer International Edn.
E. Kit, 1995, Software Testing in the Real World: Improving the Process, Pearson Education, Delhi.

ELECTIVE – III
3. DISTRIBUTED COMPUTING

SUBJECT CODE:	THEORY	MARKS : 100

CREDIT: 5

SEMESTER: VI **TOTAL HOURS:90**

COURSE OBJECTIVES

- This course introduces the concepts of Distributed databases and Distributed File system and its Hardware concepts.

Unit-I (18hrs)

Distributed data base – Security and Integrity – New Data base application – Design of data bases – Knowledge based case studies for relational network and hierarchical systems. Distributed processing – Models for distributed computing – Load balancing – Remote procedure calls – process migration – concurrency issues on data bases.

Unit-II (18hrs)

Hardware concepts – Switched multiprocessor, Bus based multicomputers, Switched multicomputers – Software concepts – Network operating systems and NFS – Time distributed systems.- Design Issues : Transparency – Flexibility – Reliability – performance and scalability.

Unit-III (18hrs)

Communications in distributed systems – The client – server model, Blocking vs Unbuffered primitives - Implementation of client-server model.

Unit-IV (18hrs)

Synchronization in distributed systems – Clock synchronization – Mutual exclusion – Election algorithms – Atomic transactions – Deadlocks in distributed system – Threads – Thread usage and Implementation of thread packages – processor allocation.

Unit-V (18hrs)

Distributed File system : File service interface – semantics of the file sharing – Distributed file system – Implementation of new trends in distributed file systems.

1.Recommended Texts

i. A.S Tanenbaum, " Modern Operating Systems " , Pearson Education

2.Reference Books

i.James Martin, " Computer Networks and Distributed Processing, Software Techniques and Architectures", Pearson Education.