ABOUT THE INSTITUTION

The Kovai Kalaimagal Educational Trust established in the year 1992 with an aspiration to quench the educational thirst of the poor and the needy strata of the society particularly from rural area. It sprouted with the establishment of a school and soon extended to add Kovai Kalaimagal College of Arts and Science in the year 1996 – 1997, Coimbatore Institute of Management and Technology in 1996 – 1997, Coimbatore Institute of Engineering and Technology in 2001 – 2002 and CIET School of Architecture in 2013 – 2014. The trust is managed by the dedicated team of trustees Dr. T. Banumathi, Dr. T. Namradha, Dr. K. A. Chinnaraju, Tmt. P. Shanmugadevi, Thiru. S. Subramanian and Thiru. M. Thangavelu who fully devote their time for the development of the institutions under the trust and it is due to their tireless efforts, the colleges have carved a name for themselves in the academic circle.

The college is situated in a serene atmosphere surrounded by picturesque mountains offering a very conducive environment for the academic perseverance. It is an ISO 9001:2008 certified institution and it has also been accredited by NAAC with 'A' grade. Committed to make quality education affordable especially to economically weaker sections particularly from rural area and strengthen the areas of research, enhance the process of sensitizing the students to personal values, spiritual growth and social responsibility. The college has taken every effort to ensure sustenance and enhancement of the quality in education.

Promoting Body

The Kovai Kalaimagal Educational Trust (KKET) was started in 1992 to establish educational institutions with the motto: 'Light the Light within'. The trust has, so far, established Kovai Kalaimagal College of Arts and Science, Coimbatore Institute of Engineering and Technology, CIET School of Architecture and Coimbatore Institute of Management And Technology at Vellimalaipattinam, Narasipuram Post, Thondamuthur Via, Coimbatore - 641 109.

Environment

KKCAS is located at Vellimalaipattinam, near Narasipuram, sprawling over a land area of 10.58 acres, surrounded by green hillocks. The campus has a serene and studious atmosphere with least disturbance and distraction. The students find the environment to be very conducive for their studies. Facilities in the campus meet their needs for extra / co-curricular activities.

ISO 9001:2008

As our institution is an ISO 9001:2008 certified institution, we have a strong system which takes care of the planned activities for enhancing quality in every respect. The institution implemented the Quality Management System and registered for the ISO certification since 2002. After implementation of the Quality Management System, not a single non-conformance was noticed in any of the QMS audit.

NAAC

Our institution was accredited with "A" grade by NAAC in the year 2011 and again Re-accredited with "A" grade by NAAC from September 2016.

Centre for Research

There is a research committee constituted in KKCAS which takes care of the promotion of research activities. Majority of members of faculty of Computer Science are the research guides guiding the scholars who pursue MPhil programme. This committee motivates the eligible faculty to apply for more number of research projects sponsored by UGC in topics of current interest.

The committee reviews the progress made by the research scholars periodically and advises them accordingly. In case the progress is not satisfactory, the reason for the same is found out and a solution to progress further is provided.

The committee recommends the research scholars and faculty pursuing Ph.D to participate and present papers in seminars and conferences and also publish research articles in reputed national and international journals. Those who are yet to register for pursuing M.Phil or Ph.D programmes are advised to register immediately and necessary support is also provided for finding suitable guides. The committee also recommends cash awards to those who publish research articles in refereed journals and sanction of additional increments and promotions to those who complete the Ph.D degrees. This has created a good impact as is evidenced by the number of faculty coming forward to pursue Ph.D programme.

Placement Cell

The institution has a placement cell which is effectively functioning under a placement officer and a placement coordinator. The responsibility of the placement officer is to identify the skills that are required to be possessed by the students as per the requirements of the companies

and arrange for training programs for developing such skills among the students. Thus a number of training programs are organized to develop the communication skills, mathematical and English aptitude, group discussion and technical skills by the professors and professional trainers.

It also arranges career-counselling programmes through psychometric tests. These tests bring out the students strengths, weaknesses and their personal interests and attitude towards various career options available to them. If needed, it arranges for any follow-up programmes to overcome the weaknesses. Regular seminars are organized to enhance their capability for grabbing various career options.As a results nearly 75% of students are able to get placements from reputed companies.

Hostel

Separate and comfortable accommodation for boys and girls is provided within the college campus to accommodate 650 boys and 750 girls. Facilities for playing indoor games and common reading rooms with audio visual equipments are available in all the hostels.

The institution plans for providing residential accommodation to the staff and there is a proposal for the construction of staff quarters. As there is a separate RO plant, purified and safe drinking water is provided to all the students.

Recognitions

The college has been recognized for the welfare schemes implemented for the benefit of the students and has been rewarded with "Best College Award" during 2007 – 2008 by the Bharathiar University. It has also been awarded with "Third Best College Award" for overall performances during the year 2008-2009 based on ten different criteria such as Results of University Examinations, Conducting Seminars, Workshops, Symposia and State and National Level Conferences, Self Development Programmes for Students, Number of Placements made in the Campus Interviews, Student Supporting Services, Faculty Development Programmes, Publication of Books and Research articles in Journals and Magazines, Research Activities, Social Service through NSS, YRC and RRC and achievements in Sports and Games. The institute was awarded with "A" Grade by National Assessment and Accreditation Council (NAAC). The college was granted Autonomous status by UGC, New Delhi for six years with effect from 2016-2017.

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

(An Autonomous Institute Affiliated to Bharathiar University)

Re-accredited with "A" grade by NAAC

Regulations for Post Graduate Programmes

(Under Choice Based Credit System)

1.   REGULATIONS

This regulation is effective from the academic year 2017 -'18.

1. 1 Eligibility for Admission

S.No.	Course	1. Eligibility Condition
1.	M.Sc(CS)	A pass with 50% marks in B.Sc (Computer Science) / Computer Technology / Information Technology / Electronics / Software Systems /Applied Sciences /BCA.

1.2   Duration and Course of study

Two Academic years with four semesters, the duration of the first and third from June to November and the second and fourth semesters from December to April. The duration of each semester is 90 working days with 5 hours a day.

1.3   The Medium of Instruction and Examinations

The medium of instruction and examinations shall be English.

1.4   Requirements for Attendance

1. A candidate will be permitted to take the examination for any semester, if he/she secures not less than 75% of attendance out of the 90 working days during the semester.

2. A candidate who has secured attendance less than 75% but 65% and above shall apply with the prescribed fee for the condonation of lack of attendance. On the recommendation of the Principal, he will be permitted to take up the examination.

3. A candidate who has secured attendance less than 65% but 55% and above in any semester, will be permitted to continue the course but will not be permitted to appear for the examination in the current papers. However he/she will be permitted to appear for the examination in the papers in which he/she has arrears. He/she will have to compensate the shortage of attendance in the subsequent semester and take the examination in the papers of both the semester together .

4. A candidate who has secured less than 55% of attendance in any semester will not be permitted to take the regular examinations and to continue the study in the subsequent semester. He/she has to re-do the course by rejoining in the semester in which the attendance is less than 55%.

5. A candidate who has secured less than 65% of attendance in the final semester has to compensate his / her attendance shortage in a manner to be decided by the Head of the Department concerned after rejoining the course.

1.5 Restriction to take the Examinations

1. Any candidate having arrear paper(s) shall have the option to take the examinations in any arrear paper(s) along with the subsequent regular semester papers.

2. Candidates who fail in any of the papers shall pass the paper(s) concerned within five years from the date of admission to the said course. If they fail to do so, they shall take the examination in the revised text / syllabus, if any, prescribed for the immediate next batch of candidates. If there is no change in the text / syllabus they shall take the examination in that paper with the syllabus in vogue, until there is a change in the text or syllabus.

   In the event of removal of that paper consequent to the change of regulations and / or curriculum after a five year period, the candidates shall have to take up on equivalent paper in the revised syllabus as suggested by the chairman and fulfil the requirements as per regulations/curriculum for the award of the degree.

1.6 The Evaluation System

The major objective of the institution's evaluation system is to motivate all students to

excel in their performance. The students' performance is continually assessed through Continuous Internal Assessment (CIA) and End Assessment Examinations(EAE). The CIA, EAE break up for theory papers is 25:75 and practical is 40:60.

1.6.1 Break Up of Continuous Internal Assessment (CIA) Marks

For PG Courses - Theory

Content	Marks Awarded
Internal Assessment Test	05
Online Test	05
Model Examination	10
Assignment (1 Number) & Seminar (1 Number)	05
Total	**25**

For PG Courses - Practical

Content	Marks Awarded
Minimum ten Experiments / Practical Paper / Semester	20
Internal Assessment Tests	05
Model Examination	10
Record Note Book	05
Total	**40**

For PG Courses - Project Viva Voce

Content	Marks Awarded
Review & Content Presentation (3 Reviews) 3*40	120
Record	40
Total	**160**

1.6.2 End Assessment Examination (EAE)

1. Semester examination will be conducted at the end of each semester after completing a minimum of 90 working days.

2. End Assessment Examination for the odd semester will generally be held during November and even semester during April.

3. The question papers for all the courses will be set by the external examiners.

4.The exams for Major & Elective will be conducted for a maximum of 75 marks for three hours.

The passing minimum is 50% (38 out of 75 marks) and overall passing minimum putting the CIA

and EAE marks together will be 50%.

4. Question Paper Pattern: (**Major & Elective**)

Part A	10 Marks	10 Questions - 1 Mark each-Objective Type
Part B	25 Marks	5 Questions- 5 Marks each – either or type.
Part C	40 Marks	5 Questions- 8 Marks each – either or type.
Total	1. Marks	

5. Extra Credit Course will be valued for a total of 100 marks. The pattern of the Question paper will be as follows:

Question paper pattern: (**Extra Credit Courses**)

Part A	40 Marks	5 Questions- 8 Marks each – either or type.
Part B	60 Marks	5 Questions- 12 Marks each – either or type.
Total	**100 Marks**	

6. The marks secured in the extra credit course will get reflected in the mark sheet only if the candidate has secured 50% marks and above.

7. The students will be allowed to opt for only two papers per semester under the extra credit courses from first semester onwards.

8. The extra credit courses are self learning courses for which only guidance will be provided by the faculty.

9. There will be two independent valuations for all theory PG courses with first valuation by the course faculty and the second valuation by external examiner. The average marks of first and second valuation will be taken as the final marks. If there is a difference of 15% or more between the first and second valuations, then paper will be referred for third valuation and the average of the marks which are closer among the three valuations will taken as the final marks.

10. Supplementary examination will be conducted for the benefit of final year students after 15 days of the declaration of the final semester results. Candidate who has arrears in any semester subject to maximum of three papers can appear for the supplementary exam conducted after the final semester.

11. A candidate may request for re-totalling of his/her answer script by applying application addressing to the Controller of Examination through the Principal, paying prescribed

fees. This provision is available for all theory papers taken in the EAE. However there is no provision for revaluation of theory/ practical papers.

12. Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear once within a period of subsequent two semesters. The improved marks shall be considered for classification but not for ranking. When there is no improvement, there shall not be any change in the original marks already awarded.

1.6.3 Break Up of End Assessment Examination (EAE) Marks

PG Courses – Practical

Content	Marks Awarded
Program - 1	20
Program - 2	20
Viva voce	10
Record	10
Total	**60**

PG Courses - Project Viva Voce

Content	Marks Awarded
Report	10
Power Point Presentation	**10**
Viva Voce	**20**
Total	**40**

1.7 Grading

The following table gives the marks grade points, letter grades and classification to indicate the performance of the candidate.

Conversion of Marks to Grade Points and Letter Grade

Range of Marks	Grade Points	Letter Grade	Description
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
00-49	0.0	RA	Re – Appear
ABSENT	0.0	AB	Absent

C_i = Credits earned for course i in any semester

G_i = Grade Point obtained for course i in any semester

n = refers to the semester in which such course were credited

For a Semester:

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

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

For the Entire Programme:

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

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

CGPA	Grade	Classification of Final Result
9.5 and above up to 10.0	O+	First Class – Exemplary*
9.0 and above but below 9.5	O	
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	
0.0 and above but below 5.0	U	Re – Appearance

Classification of Successful Candidates

A candidate who passes all the examinations in Part I to Part V securing following CGPA and Grades shall be declared as follows for each part:

CGPA	Grade	Classification of Final Result
9.5 and above up to 10.0	O+	First Class – Exemplary*
9.0 and above but below 9.5	O	
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	
0.0 and above but below 5.0	U	Re - Appearance

* The candidates who have passed in the first appearance and within the prescribed semester of the Programme (Major and Elective Course alone) are eligible.

.8 **Course Completion**

Students shall complete the programme within a period not exceeding two years for PG courses from the date of admission.

SCHEME OF EXAMINATION AND PROGRAMME STRUCTURE
M.Sc (Computer Science) (2016 -2017)

Part	Sub Code	Study Components	Ins.hours per week	CIA	Exam	Total	Credits
		Semester – I					
III	16P1CSCT01	**Core 1: .**NET Programming	4	25	75	100	4
	16P1CSCT02	**Core 2:** Data Mining and Warehousing	4	25	75	100	4
	16P1CSCT03	**Core 3:** Cyber Laws and Security Policies	4	25	75	100	3
	16P1CSCT04	**Core 4:** Advanced Computer Networks	4	25	75	100	3
	16P1CSCT05	**Core 5:** Advanced Software Engineering	4	25	75	100	4
	16P1CSCP06	**Core 6: .**NET Programming – Practical	3	40	60	100	3
	16P1CSCP07	**Core 7:** Data Mining Using WEKA Tool - Practical	3	40	60	100	3
		Library Work	4	--	--	--	--
						Total Credits	**24**
		Semester – II					
III	16P2CSCT08	**Core 8:** Distributed Computing and Linux	5	25	75	100	4
	16P2CSCT09	**Core 9:** Cloud Computing	5	25	75	100	4
	16P2CSCT10	**Core 10:** Advanced Java Programming	4	25	75	100	4
	16P2CSCP11	**Core 11:** Linux using Shell Scripting – Practical	4	40	60	100	3
	16P2CSCP12	**Core 12:** Advanced Java Programming – Practical	4	40	60	100	3
		Elective 1	4	25	75	100	4
		Library Work	4	--	--	--	--
						Total Credits	**22**
		Semester – III					
III	16P3CSCT13	**Core 13:** Digital Image Processing	4	25	75	100	4
	16P3CSCT14	**Core 14:** Phython	4	25	75	100	4
	16P3CSCT15	**Core 15:** Mobile Applications	4	25	75	100	3
	16P3CSCT16	**Core 16:** Big Data Analytics	3	25	75	100	3
	16P3CSCP17	**Core 17:** Digital Image Processing - Practical	3	40	60	100	3
	16P3CSCP18	**Core 18:** Phython - Practical	3	40	60	100	3
		Elective 2	4	25	75	100	4
		Skill Based Subject 1: Technical Seminar and Report Writing	2	50	-	50	2

		Library Work	3	--	--	--	--
						Total Credits	26

		Semester – IV					
III	16P4CSCV19	**Core 19:** Project Work and Viva Voce	-	-	200	200*	18
						Total Credits	18
		Total	90			2200	90

Project Work carries 200 marks with 20 credits. The breakup of marks will be as follows:-

Internal assessment: 160 marks (40 Marks for 3 reviews and 40 Marks for Record) and External assessment : 40 marks (Viva Voce).

List of Electives

List of Electives		
	Sub Code	**Name of the Subjects**
Elective 1	**16P2CSET1A**	Grid Computing
	16P2CSET1B	Neural Networks and genetic algorithm
	16P2CSET1C	E- Technologies
	16P2CSET1D	Multimedia and its applications
Elective 2	**16P3CSET2A**	Enterprise Resource Planning
	16P3CSET2B	Software Testing
	16P3CSET2C	Compiler Design
	16P3CSET2D	Software Project Management

List of Extra Credit Courses

Extra Credit Courses		Credits
Sub.Code	**Subjects**	**2**
16PCSECC01	Fuzzy Mathematics	2
16PCSECC02	Operation Research	2
16PCSECC03	Financial Accounting	2
16PCSECC04	Management Information System	2
16PCSECC05	Human Resource Management	2
16PCSECC06	Principles of Marketing	2

SEMESTER - I
CORE 1 : .NET PROGRAMMING

Subject Code: 16P1CSCT01   **Total Hrs:60**   **No. of Credits: 4**

Objectives:
- To enable the students to learn .NET technologies
- To gain knowledge about the methodologies behind VB.Net and ASP.Net
- To develop Dot Net based application using ADO.NET and SQL Managed Provider-OLEDB Managed Provider.

UNIT I   **Hours: 10**

Microsoft .NET Framework - The .NET Framework classes –Common Language Runtime – Common Type system and Common Language specification – Visual studio .NET IDE. Visual Basic .NET – Visual Basic .NET IDE –Variables – Data types – Constants – Arrays – Dynamic arrays- Controlling the flow – if statement – select case – Loops.

UNIT II   **Hours: 12**

Procedures: modular coding, arguments – Structures- Collections: Advanced array, Arraylist and hash table. Lists- sorted list. Creating custom class, adding methods and properties. Building Windows Applications – working with forms.

UNIT III   **Hours: 12**

Basic windows controls- common dialog controls- Rich text box control- Debugging and Error Handling: types of errors, Exceptions and structured exception handling – Accessing databases – Building Database applications with ADO .Net- ADO .Net objects.

UNIT IV   **Hours: 13**

ASP .NET – Introducing web developer tools – Introduction to ASP .NET server Programming – Using variables and constants in web forms – Working with web objects to store data – Designing .NET web Applications – Programming with Visual Basic .NET – Advanced web controls – Managing data with ASP .NET

UNIT V   **Hours: 13**

C# Programming – Evolution of C# and .NET – Why C# - Elements of C# program – Programming Example – Data types and Expressions – Making decisions – Repeating Instructions – Arrays and Collection – Controls – Programming based on events – Database access with ADO .NET

REFERENCE BOOKS:
1. Evangelos Petroutsos, Mastering Visual Basic .NET, BPB Publications, Latest Edition.
2. Barbara Doyle, Programming in C# , Cengage Learning publications – Latest Edition.
3. Kathleen Kalata, Web Applications using ASP.NET 2.0, Cengage Learning publications , Latest Edition.
4. David Chappell, Understanding .NET , Pearson education, 2002
5. David.S.Platt, Introducing Microsoft .Net, PHI, 2003.
6. G.Andrw Duthie , Microsoft ASP .NET Programming with Microsoft Visual C# .NET step by step , PHI ,2003.

SEMESTER - I
CORE 2 : DATA MINING AND WAREHOUSING

Subject Code:16P1CSCT02　　　　　**Total Hrs:60**　　　　　**No. of Credits: 4**

Objectives:
To enable the students
- To know the basics of data mining and warehousing.
- To Understand various techniques in data mining.
- To learn about architecture of data warehouse and its applications

UNIT I　　　　　　　　　　　　　　　　　　　　　　　　**Hours: 12**

Introduction – Data mining – Data mining functionalities – kinds of patterns can be mined – classification – major issues. Data warehouse – A multidimensional data model – Data warehouse architecture – Data warehouse implementation – From data warehouse to data mining.

UNIT II　　　　　　　　　　　　　　　　　　　　　　　**Hours: 11**

Data pre-processing – Data cleaning – Data Integration and Transformation – Data Reduction – Discretization and concept hierarchy generation – Data mining primitives – Data mining Task.

UNIT III　　　　　　　　　　　　　　　　　　　　　　**Hours: 13**

Association Rule Mining – Mining single dimensional Boolean association rules from transactional databases –. Classification and prediction – Issues regarding classification and prediction – Bayesian classification- Classification by Back propagation – classification based on concepts from association rule mining.

UNIT IV　　　　　　　　　　　　　　　　　　　　　　**Hours: 12**

Cluster Analysis – A categorization of Major clustering methods - Partitioning methods-Hierarchical methods – Grid based methods -Model based clustering methods – Density – based methods.

UNIT V　　　　　　　　　　　　　　　　　　　　　　　**Hours: 12**

Applications and Trends in Data Mining – Data mining system products and Research prototypes – Additional themes on Data mining – Social Impacts of Data Mining – Trends in Data mining-Mining Spatial Databases – Mining Time - series and sequence data – Mining the World wide web.

REFERENCE BOOKS:
1. Jiwei Han, Michelien Kamber, Data Mining Concepts and Techniques, Morgan Kaufmann Publishers an Imprint of Elsevier,Latest Edition.
2. Arun K.Pujari, Data Mining Techniques, Universities Press (India) Limited,
3. George M. Marakas, Modern Data warehousing, Mining and Visualization: Core Concepts, Printice Hall, First Edition, 2002.
4. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson, 2008.
5. Soman K. P, Shyam Diwakar, V. Ajay, Data Mining, Printice Hall, 2008.

SEMESTER - I
CORE 3 : CYBER LAWS AND SECURITY POLICIES

Subject Code:16P1CSCT03   **Total Hrs:60**   **No. of Credits: 3**

Objectives:
To Enable the students to have
- an overview of Information Security and Assurance.
- an exposure to the spectrum of security activities, methods and methodologies.
- Knowledge on infrromation securtity policies and procedures.

UNIT-I   **Hours: 12**
        Introduction to Computer Security: Definition, Threats to security, Government requirements, Information Protection and Access Controls, Computer security efforts, Standards, Computer Security mandates and legislation, Privacy considerations, International security activity.

UNIT-II   **Hours: 12**
        Secure System Planning and administration, Introduction to the orange book, Security policy requirements, accountability, assurance and documentation requirements, Network Security, The Red book and Government network evaluations.

UNIT-III   **Hours: 12**
        Information security policies and procedures: Corporate policies- Tier 1, Tier 2 and Tier3 policies - process management-planning and preparation-developing policies-asset classification policy-developing standards.

UNIT- IV   **Hours: 12**
        Information security: fundamentals-Employee responsibilities- information classification-Information handling- Tools of information security- Information processing-secure program administration.

UNIT-V   **Hours: 12**
        Organizational and Human Security: Adoption of Information Security Management Standards, Human Factors in Security- Role of information security professionals.

REFERENCES BOOKS:
1. Debby Russell and Sr. G.T Gangemi, "Computer Security Basics (Paperback)", 2ndEdition, O' Reilly Media, 2006.
2. Thomas R. Peltier, "Information Security policies and procedures: A Practitioner's Reference", 2nd Edition Prentice Hall, 2004.
3. Kenneth J. Knapp, "Cyber Security and Global Information Assurance: Threat Analysis and Response Solutions", IGI Global, 2009.
4. Thomas R Peltier, Justin Peltier and John blackley, "Information Security Fundamentals", 2nd Edition, Prentice Hall, 1996

SEMESTER - I
CORE 4 : ADVANCED COMPUTER NETWORKS

Subject Code: 16P1CSCT04   **Total Hrs:60**   **No. of Credits: 3**

Objectives:
To enable the students
- To learn the digital networks & internet protocols
- To have a clear idea about various functions of TCP and UDP.
- To learn about user networks interfaces and protocols of on B-ISDN and its operations and maintenance.

UNIT I   **Hours: 12**
ISDN Overview: The Integrated Digital Network -OSI Reference Model & TCP /IP– A Conceptual Overview of ISDN – ISDN Standards – ISDN Interfaces and Functions: Transmission Structure – User-Network Interface Configuration – ISDN Protocol Architecture – ISDN Connections – Addressing – Interworking.

UNIT II   **Hours: 12**
ISDN Physical Layer: Basic User- Fiber Optics Media -Network Interface – Primary Rate User-Network Interface – U Interface – ISDN Data Link Layer: LAPD – Terminal Adaption – Bearer Channel Data Link Control Using I.465/V.120,207.

UNIT III   **Hours: 12**
ISDN Network Layer: Overview – Basic Call Control – Control of Supplementary Services – ISDN Services: Service Capabilities – Bearer Services and Teleservices – Basic and Supplementary Services - B-ISDN network concept: General Architecture of the B-ISDN – Networking Techniques – Signaling Principles – Broadband network Performance – Traffic management aspects – Operation and maintenance aspects – Customer network aspects.

UNIT IV   **Hours: 12**
B-ISDN user-network interfaces and protocols: B-ISDN protocol reference model – General aspects of the user-network interface – Physical layer of the user-network interface at 155/622 Mbit/s Additional user-network interfaces – Equipment-internal interfaces – ATM layer – ATM adaptation layer.

UNIT V   **Hours: 12**
Operation and maintenance of the B-ISDN UNI: Network configuration for OAM of the customer access – OAM functions and information flows – Implementation issues – Integrated local management interface – Traffic management: Traffic control procedures and their impact on resource management – Mechanisms to achieve a specified QoS – Statistical multiplexing in ATM networks – Congestion control Signaling , routing and addressing - ATM switching: Switching elements – Switching networks – Switches and cross-connects.

Reference Books:

1. William Stallings, ISDN and BroadBand ISDN with Frame Relay and ATM, Pearson Education, 4 th Edition, 2009
2. Rainer Handel, Manfred N Huber, Stefan Schroder, ATM Networks Concepts Protocols Applications, Pearson Education Asia, Latest Edition.
3. John M.Griffiths, ISDN Explained, 2e, March 1995, Willey & Sons.
4. Koji Kobayashi, Computers and Communications, The MID Press (a Version of c and C) 1986.
5. Walter, J., Gooralski , J., Introduction to ATM networking , MCGraw-Hill Inc.,

SEMESTER - I
CORE 5 :ADVANCED SOFTWARE ENGINEERING

Subject Code:16P1CSCT05　　　　**Total Hrs:60**　　　　**No. of Credits: 4**

Objectives:
To enable the students
- To provide knowledge on Software engineering concepts
- To make the students understand various techniques of cost estimation of software , software design and software Requirements.
- To give a roadmap to design a new software project.
- To understand various issues in implementation of software , verification , validation and maintenance of software.

UNIT I　　　　　　　　　　　　　　　　　　　**Hours: 12**
　　　　Introduction to Software Engineering: Definitions – Size Factors – Quality and Productivity Factors. **Planning a Software Project:** Planning the Development Process – Planning an Organizational Structure.

UNIT II　　　　　　　　　　　　　　　　　　**Hours: 12**
　　　　Software Cost Estimation: Software cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Estimation Costs.

UNIT III　　　　　　　　　　　　　　　　　**Hours: 12**
　　　　Software Requirements Definition: The Software Requirements specification – Formal Specification Techniques. **Software Design:** Fundamental Design Concepts – Modules and Modularization Criteria.

UNIT IV　　　　　　　　　　　　　　　　　**Hours: 12**
　　　　Design Notations – Design Techniques. **Implementation Issues**: Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation Guidelines.

UNIT V　　　　　　　　　　　　　　　　　　**Hours: 12**
　　　　Verification and Validation Techniques: Quality Assurance – Walkthroughs and Inspections – Unit Testing and Debugging – System Testing. **Software Maintenance:** Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance – Configuration Management.

REFERENCE BOOKS:
1. **Software Engineering Concepts – Richard Fairley,** Latest Edition., **TMH.**
2. Software Engineering for Internet Applications – Eve Anderson, Philip Greenspun, Andrew Grumet, 2006, PHI.
3. Software Engineering Project Management – 2nd Edition, Wiley India.
4. Software Quality Engineering – Jeff Tian, Student edition, 2006, Wiley India

SEMESTER - I

CORE 6 : .NET PROGRAMMING PRACTICAL

Subject Code:16P1CSCP06 **Total Hrs:45** **No. of Credits: 3**

1. Program to develop Date & time using VB.Net
2. Write VB.NET program to allow the user to input two integer values and then the program print the results of adding, subtracting, multiplying, and dividing among the two values.

3. Develop any two Console application in VB.Net.
   - (i) Using Structure
   - (ii) Using arrays
   - (iii) Creating functions and Procedures
   - (iv) Create a new class, add methods and properties.
4. Create minimum two simple applications using controls. Eg: Calculator, Drawing Pictures using GDI, Animation and Trainer Kit in ASP.Net.
5. Program to demonstrate the textbox control in ASP.NET
6. program to demonstrate the checkbox control in ASP.NET
7. Develop minimum two database applications using ADO.Net.

Example:
   - (i) Online Banking.
   - (ii) Online Shopping.
   - (iii) Online Recruitment System.
   - (iv) Online Railway Reservation System.
8. Program to design a registration form by using ASP.NET objects

SEMESTER - I
CORE 7 : DATA MINING USING WEKA TOOL PRACTICAL

Subject Code: 16P1CSCP07   **Total Hrs:45**   **No. of Credits: 3**

PROGRAM LIST

1. Demonstration of preprocessing on dataset student.arff

2. Demonstration of preprocessing on dataset labor.arff

3. Demonstration of Association rule process on dataset contactlenses.arff using apriori algorithm

4. Demonstration of Association rule process on dataset test.arff using apriori algorithm

5. Demonstration of classification rule process on dataset student.arff using j48 algorithm

6. Demonstration of classification rule process on dataset employee.arff using j48 algorithm

7. Demonstration of classification rule process on dataset employee.arff using id3 algorithm

8. Demonstration of classification rule process on dataset employee.arff using naïve bayes algorithm

9. Demonstration of clustering rule process on dataset iris.arff using simple k-means

10. Demonstration of clustering rule process on dataset student.arff using simple k-means

SEMESTER – II
CORE 8: DISTRIBUTED COMPUTING AND LINUX

Subject Code: 16P2CSCT08   **Total Hrs:75**   **No. of Credits: 4**

Objectives:
To enable the students
- To learn the fundamentals of Operating Systems
- To gain knowledge on Distributed operating system concepts that includes architecture, Mutual exclusion algorithms, Deadlock detection algorithms and agreement protocols
- To gain an insight into the distributed resource management components viz. the algorithms for implementation of distributed shared memory, recovery and commit protocols
- To know the components and management aspects of Real time, Mobile operating Systems.

UNIT I   **Hours: 15**
Introduction-Definition of a Distributed System- Goals- Connecting Users and Resources – Openness – Scalability – hardware Concepts: Multiprocessors – Homogeneous multicomputer systems – Heterogeneous Multicomputer Systems – Software Concepts: Distributed operating Systems - Network Operaing Systems – Middleware- The Client- Server model: Cline and Servers – Application layering – Client Server Architectures.

UNIT II   **Hours: 15**
Processes : Threads - clients – code migration: Approaches to code migration – Migration and Local Resources – Migration in Heterogeneous Systems – Software agents – Naming : naming Entities: names, identifiers and Addresses – Name resolution – The implementation of a namespace – Locating Mobile entities: Naming versus Locating entites – Simple solutions – Removing unreferenced entities.

UNIT III   **Hours: 15**
Synchronization: clock Synchronization - Physical Clock – Synchronization algorithms – use of Synchronized clocks – logical clocks - Global State –Election algorithms - Mutual Exclusion – Distributed Transactions – consistency and Replication – Data Centric Consistency Models: Linearizability and Sequential Consistency – Weak Consistency – Distribution protocols: Replica placement – Update Propagation.

UNIT IV   **Hours: 15**
Fault Tolerence: Introduction to fault tolerance – Process resilience: design issues – Failure Masking and replication – Reliable Client-Server Communication: Point to Point Communication – RPC semantics in the presence of failures – Reliable group of Communication : basic Reliable – multicasting Schemes – Overview of CORBA – Overview of DCOM - Overview of NFS - Overview of WWW.

UNIT V   **Hours: 15**

Linux Operating systems : Introduction –History of UNIX and Linux – System Features – Software Features – Differences between Linux and Other Operating System – hardware requirements - sources of Linux Information – Linux Startup and Setup : User accounts – Accessing the linux system – Unix Commands – Linux File Structure: Linux file types – File structures – managing Files - Managing Directories – File and Directory operation – File Management Operation: File and Directory permissions – Jobs – System Administration – Shells in Linux - Shell operations: Command Line – Standard Input/Output- Redirection – Pipes – Shell Scripts – Shell Variables - Arithmetic Shell Operations – Control Structures.

REFERENCE BOOKS:
1. Andrew S.Tanenbaum and Marten Van Steen, Distributed Systems – Principles and Paradigms , PHI, 2004.
2. Richard Petersen , The Complete Reference – Linux , TMH, 1998.
3. Pradeep K.Sinha, Distributed Operating Systems , PHI, 2001.
4. George coulouris, Jean Dollimore and Tim Kindberg, Distributed Systems – Concepts and Design , 3rd Edition, Pearson Education,2002.

SEMESTER – II
CORE 9 :CLOUD COMPUTING

Subject Code: 16P2CSCT09   **Total Hrs:75**   **No. of Credits: 4**

Objectives:
To enable the students
- To learn the basics of cloud computing and its applications.
- To Understood the Cloud computing architectures, applications and challenges
- To learn about various cloud storages.

UNIT – I   **Hours: 15**
        INTRODUCTION: Cloud Computing Introduction, From, Collaboration to cloud, Working of cloud computing, pros and cons, benefits, developing cloud computing services, Cloud service development, discovering cloud services.

UNIT – II   **Hours: 15**
        CLOUD COMPUTING FOR EVERYONE: Centralizing email communications, cloud computing for community, collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping schedulesm managing projects, presenting on road.

UNIT – III   **Hours: 15**
        USING CLOUD SERVICES : Collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.

UNIT – IV   **Hours: 15**
        OUTSIDE THE CLOUD : Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis

UNIT – V   **Hours: 15**
        STORING AND SHARING: Understanding cloud storage, evaluating on line file storage, exploring on line book marking services, exploring on line photo editing applications, exploring photo sharing communities, controlling it with web based desktops.

REFERENCES BOOKS:

1. Michael Miller, "Cloud Computing", Pearson Education, New Delhi, 2009
2. Anthony T. Velte,Cloud Computing A Practical Approach 1st Edition, Tata Mcgraw Hill Education Private Limited (2009)

SEMESTER – II
CORE 10: ADVANCED JAVA PROGRAMMING

Subject Code: 16P2CSCT10   **Total Hrs:75**   **No. of Credits: 4**

Objectives:
To enable the students
- To understood the trends and principles of problem solving using Java as a internet tool.
- Gained problem solving skills using advanced Java.
- Know how to Implement the RMI & EJB Concepts.

UNIT I   **Hours: 15**
        Java Utilities: Collections – I/O streams – Networking – Event Handling.

UNIT II   **Hours: 15**
        AWT: Windows, Controls, Layout Managers and Menus – Swing. Multimedia: Images, Animation and Audio – JDBC.

UNIT III   **Hours: 15**
        Java Servlets: Design – Life Cycle – Constituents of javax.servlet package – cookies – session tracking – Java Server Pages: Overview – Implicit Objects – Scripting – Standard actions – Directives.

UNIT IV   **Hours: 15**
        Remote Method Invocation: Remote Interface – The Naming Class – RMI Security Manager Class – RMI Exceptions – Creating RMI Client and Server classes – RMI – I IOP.

UNIT V   **Hours: 15**
        Java Beans: Events – Customization – Introspection – Persistence – EJB: Introduction – EJB Container – Classes – Interfaces – Deployment description – Session Bean – Entity Java Bean – Jar file.

REFERENCE BOOKS:
1. Herbert Schildt, The Complete Reference – JAVA 2 , Fourth Edition, 2001
2. Muthu, Programming with Java, Vijay Nicole Imprints Private Ltd., 2004
3. Deitel H.M. & Deital P.J, Java How To Program, Prentice-Hall of India, Fifth Edition, 2003.
4. Cay.S. Horstmann, Gary Cornel, Core Java 2 – Vol. II- Advanced Features, Pearson Education, 2004.
5. Tom Valsky, Enterprise JavaBeans – Developing component based Distributed Applications, Pearson 1999.

SEMESTER – II
CORE 11 : LINUX USING SHELL SCRIPTING- PRACTICAL

Subject Code:16P2CSCP11   **Total Hrs:75**   **No. of Credits: 3**

1. Write the shell script to check the status of file using test command.
2. Write the shell script to find the grade of student's marks.
3. Write a menu driven shell program to perform the following.
    i)   Enter the sentence in file.
    ii) Search a whole worded in an existing file.
    iii) Quit.
4. Write a shell script to perform case conversion.
5. Write a shell script to find the sum of digits.
6. Write a shell script to find the biggest of three numbers using command line arguments. Check for sufficient number of command line arguments.
7. Write a shell script to copy, delete and renaming a file.

C-Linux

8. Implementation of system calls – Open, read and close. Create, write, lseek, stat, fstat.
9. Implementation of fork & exec.
10. Interprocess communication using messages, pipes and queues.

SEMESTER – II
CORE 12: ADVANCED JAVA PROGRAMMING -PRACTICAL

Subject Code:16P2CSCP12   **Total Hrs:75**   **No. of Credits: 3**

1. Implementation of Multi threading and Exception handling concepts.
2. Implementation of I/O Streams.
3. Programs in AWT, Swing and Event handling.
4. Network Programming.
5. Programs using JDBC.
6. Implementing Servlets / JSP.
7. RMI.

SEMESTER – III
CORE 13: DIGITAL IMAGE PROCESSING

Subject Code: 16P3CSCT13   **Total Hrs:60**   **No. of Credits: 4**

OBJECTIVES:
- To provide an idea about the fundamentals of Digital image processing and the methods of Representation
- To understand about various methods image Transormation and different approaches for image Enhancement.
- To Understand about Compression and Restoration of image using Matlab.

UNIT I   **Hours:12**
  Fundamental Of Digital Image Processing : Steps in Image Processing – Building blocks of a digital image processing system – **Digital Image Representation :** Introduction - Digital image representation - Sampling and Quantization – Basic Relationship between pixels - Neignbors and Connectivity – Distance Measure.

UNIT II   **Hours:12**
  Image Transformation : Introduction – Fourier Transformation – Discrete Fourier transformation – Properties – Fast Fourier Transformation – Discrete Cosine Transformation – The Haar Transformation

UNIT III   **Hours:12**
  Image Enhancement : Introduction – Sample Domain and Frequency Domain Approaches – Techniques – Spatial Domain Techniques – Spatial Filtering – Frequency Domain – Gray Level to Color Transformation

UNIT IV   **Hours:12**
  Image Compression : Introduction – Coding Redundancy – Inter Pixel Redundancy - Psycho Visual Redundancy – Image Compression models – The Source Encoder and Decoder – Lossy Compression Techniques – Threshold Coding – Vectoer Quantization – Image Compression Standard(JPEG)-Image Restoration .

UNIT V   **Hours:12**
  Image Segmentation : Introduction – Detection of Isolated Points – Line Detection – Edge Detection – Edge Linking and Boundary Detection – Region Oriented Segmentation – Segmentation using Thresolding – Accumulative Difference Image

REFERENCE BOOKS :

1   S.Annadurai & R. Shanmugalakshmi, " Fundamentals of Digital Image Processing ", Dorling Kindersley (India) PVT., Ltd,2007
2   Rafael c. Gonzalea, Richard E. Woods, "Digital Image Processing" ,econd Edition, PHI/Person Education
3   B.Chabds, D.Dutta Majumder, " Digital image Processing and Analysis ", PHI, 2003
4   Nick Efford, "Digital image Processing indroduction using Java", Person Education , 2004.

SEMESTER – III

CORE 14: PYTHON

Subject Code: 16P3CSCT14   **Total Hrs:60**   **No. of Credits: 4**

OBJECTIVES:
- Develop a basic understanding of Python programming language.
- To understand various forms of data representation and structures supported by the Python language

UNIT I   **Hours:12**
     Welcome to PYTHON: What is PYTHON-Origins-Features-Downloading and Installing PYTHON-Running PYTHON - PYTHON Documentation - comparing PYTHON-Other Implementation.**GETTING STARTED:**Comments-Operators-Variables and Assignments-Numbers-Strings-Lists and Tuples-Dictionaries-Code Blocks use Indentation-if statement-While Loop-For Loop and range() Built in Function-List Comprehensions-Files and the open () and File() Built in Function-Errors and Exception -Functions-Classes-Modules-Useful Functions. **PYTHON Basics:**Statements and Syntax-Variable Assignments-Identifiers-Basics style Guidelines-Memory Management -First PYTHON Programs-Related Modules/Developer Tools.

UNIT II   **Hours:12**
     Numbers:Introduction to Numbers-Integers-Double Precision Floating point Numbers-Complex Numbers-Operators- Built in and Factory Function-Others Numeric Types-Related Modules.

UNIT III   **Hours:12**
     Sequences:Strings,Lists and Tuples-Sequences-String-Strings and Operators-String Only Operators-Bulit-in Functions-String Bulit in Methods-Special Features of Strings-Unicode-Related Modules-Summary of String Highlights-Lists-Operators-Bulit in Functions-List type Bulit in Methods-Special Features of Lists-Tuples-Tuple Opeators and Bulit in Functions-Special Features of Tuples-Related Modules-**Mapping and Set Types:** mapping type dictionaries-operators-bulit in and factory function-built in methods-dictionary key-set types-set type operators-built in function-set type built in method-operators,function/method summary table for set types-related modules.

UNIT IV   **Hours:12**
     Conditional Loops:If Statements-else statements-elif(aka else if Statements)-Conditional Expression-While Statements-for Statements-Break statement-Contiue statement-Pass statement-Else statement...Take Two-Iterators and the iter() Function-List comprehensions-Generator Expressions-Related Modules. **Files and Input/Output:** File objects-file Built-in methods-File Built-in Attributes-Standard Files-Command-Line Arguments-File System-File Execution-Persistyent Storage Medules-RelatedModules.

UNIT V   **Hours:12**

Errors and Exceptions: What are exceptions?-Exceptions in python-Detecting and Handling Exceptions-Context Management- Exceptions as strings-Raising Exceptions-Assertions-Standard Exceptions- Creating Exceptions-Why Exceptions(Now)?-Why Exceptions atAll?-Exceptions and the says Module-Related Modules. **Functions and Functional Programming:** What are Functions?-Calling Functions-Passing Functions-Formal Arguments-Variable-Length Arguments-Functional Programming-Varible scope-*Recursion-Generators. **Execution Environment:** Callable Objects-Code Objects-Executable Object Statements and Built-in Functions-Executing Other (python) programs-Executing Other (Non python) programs-Restricted Execution-Terminating Execution-Miscellaneous Operating System Interface-Related Modules.

REFERENCE BOOKS:
1. Core Python Programming 2 nd Edition ,Wesley J.Chun .
2. Python Cookbook by David Beazley,Brain K.Jones.
3. Fundamentals of Python:First programs*(Intoduction to Programming)1 st Edition By KennethA.Lambert.
4. Fundamentals of Python:Data Structures by Kenneth Lambert,January 1,2014,Nelson Education.

SEMESTER – III

CORE 15: MOBILE APPLICATIONS

Subject Code: 16P3CSCT15   **Total Hrs:60**   **No. of Credits: 3**

OBJECTIVES:
- To understand the knowledge of Android and Its Applications
- To understand the testing , security design and architecture in Android

UNIT I   **Hours:12**

Getting Started-Understanding The Android Life Cycle-Installing .apk Files Onto An Emulator Via The Adb-Installing Apps Onto An Emulator Via Slideme-Sharing Java Classes From Another Eclipse Project-Referencing Libraries To Implement External Functionality-Using SDK Samples To Help Avoid Head Scratching-Keeping The Android Sdk Updated

Testing-Doing Test-Driven Development(TDD)In Android-Setting Up In Android Virtual Device (AVD) For App Testing-Testing On A Huge Range Of Devices With Cloud Based Testing-Creating And Using A Test Project –troubleshooting Application Crashes-Getting Bug Reports From Users Automatically With Bug Sense-Reproducing Activity Life Cycle Scenario For Testing.

UNIT II   **Hours:12**

Inter-/Intra-ProcessCommunication-Introduction: Inter-/Intra-Process Communication-Opening A Webpage, Phone Number Or Anything Else With An Intent-Emailing Text From A View-Sending An Email With Attachments-Creating a Responsive Application using Threads-Sending Messages Between Threads Using An Activity Thread Queue And Handler-Creating An Android Epoch HTML/JAVA Script Calendar.

Content Provider-Introduction-Content Provider**-**Retreiving Data From A Content Provider-Writing A Content Provider-Writing An Android Remote Service.

UNIT III   **Hours:12**

Graphics-Introduction-Using A Custom Font-Drawing A Spinning Cube With Opengl Es-Adding Controls To The Opengl Spinning Cube-Freehand Drawing Smooth Curves Taking A Picture Using Intent –taking A Picture Using Android.Media.Camera-Scanning A Barcode Or Qr Code With The Google ZXing Barcode Scanner-Using Androidplot To Display Charts And Graphs-Using Inkspace To Create An Android Launcher Icon-Creating Easy Launcher Icons From Open Clipart.Org Using Paint.Net-Using Nine Patch Files-Creating HTML5 Charts With Android RGRAPH-Adding A Simple Raster Animation-Using Pinch To Zoom.

UNIT IV   **Hours:12**

Android Security Design And Architecture-Understanding Android System Architecture-Understanding Security Boundaries And Enforcement-Androids Sandbox-Android Permissions-Looking Closer At The Layers-Android Applications-The Android Framework-The Dalvik Virtual Machine-User-Space Native Code-The Kernel-Complex Security,Complex Exploits.

UNIT V **Hours:12**

     Case Study-Telephone Applications-Networked Applications-Gaming And Animation-Social Networking-Location And Map Applications.

REFERENCE BOOKS:
1. Android Cook Book-Edited by Ian F. Darwin Shroff Publishers and Distributors PVT Limited.
2. Android Hackers Handbook -Wiley , Joshua J . Drake

SEMESTER – III

CORE 16: BIG DATA ANALYTICS

Subject Code: 16P3CSCT16   **Total Hrs: 45**   **No. of Credits: 3**

OBJECTIVES:
- To explore the fundamental concepts of big data analytics
- To develop in-depth knowledge and understanding of the big data analytic domain.
- To learn to analyze the big data using intelligent techniques.
- To understand the various search methods and visualization techniques.
- To learn to use various techniques for mining data stream.
- To understand the applications using Map Reduce Concepts

UNIT-I   **Hours:12**
    Introduction To Big Data: Introduction to BigData Platform – Traits of Big data - Challenges of Conventional Systems -Web Data – Evolution Of Analytic Scalability - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

UNIT-II   **Hours:12**
    Data Analysis: Regression Modeling - Multivariate Analysis - Bayesian Modeling - Inference and Bayesian Networks - Support Vector and Kernel Methods - Analysis of Time Series: Linear Systems Analysis - Nonlinear Dynamics - Rule Induction - Neural Networks: Learning And Generalization - Competitive Learning - Principal Component Analysis and Neural Networks -Fuzzy Logic: Extracting Fuzzy Models from Data - Fuzzy Decision Trees - Stochastic Search Methods.

UNIT-III   **Hours:12**
    Mining Data Streams Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing -Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream –Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

UNIT-IV   **Hours:12**
    Frequent Itemsets And Clustering : Mining Frequent Itemsets - Market Based Model – Apriori Algorithm – Handling Large Data Sets in Main Memory – Limited Pass Algorithm – Counting Frequent Itemsets in a Stream –Clustering Techniques – Hierarchical – K-Means – Clustering High Dimensional Data –CLIQUE And PROCLUS – Frequent Pattern based Clustering Methods – Clustering in Non-Euclidean Space – Clustering for Streams and Parallelism.

UNIT-V   **Hours:12**

Frameworks And Visualization :Map Reduce – Hadoop, Hive, MapR – Shading – NoSQL Databases - S3 - Hadoop Distributed File Systems – Visualizations - Visual Data Analysis Techniques - Interaction Techniques; Systems and Analytics Applications - Analytics using Statistical packages-Approaches to modelling in Analytics – correlation, regression, decision trees, classification, association-Intelligence from unstructured information-Text analytics-Understanding of emerging trends and technologies-Industry challenges and application of Analytics.

REFERENCE BOOKS:

1. Michael Berthold, David J. Hand: "Intelligent Data Analysis", Springer, 2007.
2. AnandRajaraman and Jeffrey David Ullman: "Mining of Massive Datasets", Cambridge University Press, 2012.
3. Bill Franks: "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley & sons, 2012.
4. Glenn J. Myatt: "Making Sense of Data", John Wiley & Sons, 2007
5. Pete Warden: "Big Data Glossary", O'Reilly, 2011.
6. Jiawei Han, MichelineKamber: "Data Mining Concepts and Techniques", Second Edition, Elsevier, Reprinted 2008.

SEMESTER – III

CORE 17: DIGITAL IMAGE PROCESSING - PRACTICAL

Subject Code: 16P3CSCP17　　　　　**Total Hrs:45**　　　　　**No. of Credits: 3**

POGRAM LIST

1. Write a program to convert Gray Scale image to Binary Image.
2. Write a program in MAT Lab for finding Negative of an Image.
3. Write a program for color image processing
4. Write a program to Implement Image enhancement Technique.
5. Write a program in MAT Lab for Histogram Equalization.
6. Write a program to implement Image Restoration
7. Write a program to implement Gaussian High pass Filter.
8. Write a program to detect Edge detection using Operators (Roberts, Prewitts and Sobels operators)
9. Write a program to implement Erosion & Dilation of an Image.
10. Write a program to implement   image compression.
11. Write a program to implement Boundary Extraction using morphology.
12. Write a program to implement Image Segmentation.

SEMESTER – III

CORE 18: PHYTHON - PRACTICAL

Subject Code: 16P3CSCP18　　　　　**Total Hrs:60**　　　　　**No. of Credits: 4**

PROGRAM LIST

1. Write a Program to Print the Fibonacci sequence
2. Write a Program to Convert Decimal to Binary Using Recursion
3. Write a Program to Add Two Matrices
4. To Create Program to Check Whether a String is Palindrome or Not
5. To Create Program to Sort Words in Alphabetic Order
6. Write a Program to Magic 8-ball written in Python
7. Write a Program to 8-Queens Problem (recursion)
8. Write a Program to XML/HTML parsing
9. Write a Program to"Guess the Number" Game.
10. Write a Program for nested tuple using nested indexing
11. Write a Program to set type operators .
12. Write a Program for Exception Handling.

SEMESTER – II
ELECTIVE 1 : GRID COMPUTING

Subject Code:16P2CSET1A   **Total Hrs:60**   **No. of Credits: 4**

OBJECTIVES :
- To get Knowledge on Grid Computing , and its environment
- To get Knowledge on its techniques and Architecture and Implementation
- To get Knowledge on Cluster , mamhaging grid and its services.

UNIT I   **Hours:12**
        About Grid : Introduction – Basic Concepts – Entering into grid – Definition – Grid Projects – Grid Layered Architecture – Distributed Computing – Computational Grids – Data Grids – Dynamic Virtual Organization – Distributed Shared Memeory in Grid Environment .

UNIT II   **Hours:12**
        Grid Computing Technologies : Service Oriented Architecture (SOA) – Introduction – Reference Architecture – Design and Development – Executive Paradigm-Web Services in Grid – Web service Technologies – Technologies for Web Services – Simple Object Access Protocol (SOAP)- SOAP Processing – Supporting MEP – SOAP Modules .

UNIT III   **Hours:12**
        Grid Platforms: Open Grid Service Architecture (OGSA) – Introduction – Architecture – Grid Service Description – OGSA Core Services- OGSA Basic Services – **Open Grid Services Infrastructure (OGSI) :** Introduction – OGSI Authorization and Attributes – Requirements – Standard and Specification of Attributes – OGSI Components – Web Service Resource Frame Work (WSRF)

UNIT IV   **Hours:12**
        Grid Implementation : Grid Computing Security – Intriduction – Security Fundamentals – Authentication Schemes – Standard Protocols – Grid Taxonomy – Grid Security Infrastructure (GSI) – security – Web Service Security – Different Emerging Security Technologies in Grid – Globus Toolkit - Dtaa Management – Resource Manangement – Information Services – Security – Architecture .

UNIT V   **Hours:12**
        Cluster : Introduction – History – Cluster organization – Desktop Supercomputing : Native Programming for grids – grid Enabling software applications – Managing Grid Environments – Grid Computing adoption in Research and Industr**y.**

REFERENCE BOOK :
1. P.Venkata Krishna , M.Rajasekhara Babu, V.Saritha, " Principles of Grid Computing concepts and Applications".Ane Books Pvt.Ltd.2010.
2.Ahmar Abbas : " Grid Computing – A practical guide to technology and applications, firewall Media , 2008
3. Joshy Joseph, Craig Fellenstein , "Grid Computing ", Indian Edition 2004.
4. MaoghenLI,Mark Baker: "Grid Core Technologies" , Indian Edition 2010.

SEMESTER – II
ELECTIVE 1 : NEURAL NETWORKS FUZZY LOGIC

Subject Code:16P2CSET1B   **Total Hrs:60**   **No. of Credits: 4**

Objectives:
To enable the students
- To learn about the basics of neural networks and its applications
- To know about artificial neural networks and its processes
- To understand about Feed forward neural networks, competitive learning neural networks and their various methodologies

UNIT I   **Hours :12**
        Fundamentals of Neural Networks : Basic Concepts of Neural Network-Model of an Artificial Neuron-Neural Network Architectures-characteristics of Neural Networks-Learning Methods-Taxonomy-History of Neural Network-Early Neural Network Architectures.

UNIT II   **Hours:12**
        Backpropagation Networks: Architecture of Backpropagation Network-Backpropagation Learing – Illustratrations - applications-Effect of Tuning Parameters of the Backpropagation Neural Network-Selection of various parameters in Backpropagation Neural Network-Variations of Standard Backpropagation algorithms.

UNIT III   **Hours:12**
        Adaptive Resonance Theory (ART): Introduction- ART1- ART2-Applications.

UNIT IV   **Hours:12**
        Fuzzy Sets and Systems: Fuzzy Sets-Fuzzy Relations-Fuzzy Logic-Fuzzy Rule based system-Defuzzification Methods-Applications.

UNIT V   **Hours:12**
        Fuzzy Backpropagation Networks: LR-Type Fuzzy Numbers-Fuzzy Neuron-Fuzzy Backpropagation Architecture- Learning in Fuzzy Backpropagation-inference in Fuzzy Backpropagation-Applications.

REFERENCE BOOKS:
1. Rajasekaran. S and Vijayalakshmi Pai, Neural Networks, Fuzzy Logic and Genetic Algorithms, PHI, Latest Edition.
   (Chapters: 2.1, 2.3-2.9, 3.1-3.7, 5.1-5.4, 6.3, 6.5, 7.3-7.6, 12.1-12.6)
2. Fakhreddine O. Karray, Clarence De Silva, Soft Computing and Intelligent Systems Design, Pearson, 2009.
3. Sivanandam. S. N and Deepa S. N, Principles of Soft Computing, Wiley India, 2008

SEMESTER – II
ELECTIVE 1: E –TECHNOLOGIES

Subject Code: 16P2CSET1C   **Total Hrs:60**   **No. of Credits: 4**

Objectives:
To enable the students
- To have an understanding of the Basics of E-Commerce and Technology infrastructure require for implementing the same.
- To have a knowledge on various methods and strategies for selling on the web
- To Know about web server and software require for implementing E-Commerce.
- To Know in detail about E-Marketing and E-Strategies.

UNIT I   **Hours: 12**
Introduction to Electronic Commerce: Electronic Commerce–Business Models, Revenue Models, and Business Processes – Economic Forces and Electronic Commerce – Identifying Electronic Commerce Opportunities – International Nature of Electronic Commerce. Technology Infrastructure: The Internet and the World Wide Web– Internet and World Wide Web – Packet – Switched Networks – Internet Protocols – Markup Languages and the Web – Intranets and Extranets – Internet Connection Options Internet2 and The Semantic Web. The Environment of Electronic Commerce: Legal, Ethical and Tax issues.

UNIT II   **Hours: 12**
Selling on the Web: Revenue Models and Building a Web Presence – Marketing on the Web - Business– to – Business Strategies: From Electronic Data Interchange to Electronic Commerce –Online Auctions, Virtual Communities and Web Protocols: – Auction Overview – Online Auctions and Related Business – Virtual Communities and Web Portals.

UNIT III   **Hours: 12**
Web Server Hardware and Software: – Software for Web Servers – Electronic Mail (E-Mail) – Web Site and Internet Utility Programs – Web Server Hardware. Electronic Commerce Software: Basic Functions of Electronic Commerce Software – Advanced Functions of Electronic Commerce Software – Electronic Commerce Software for Small and Midsize Companies – Electronic Commerce Software for Midsize to Large Businesses – Electronic Commerce for Large Businesses. Electronic Commerce Security:-Payment Systems for Electronic Commerce-Planning for Electronic commerce.

UNIT IV   **Hours: 12**
E- Marketing: Traditional Marketing – Identifying Web Presence Goals – The Browsing Behavior Model – Online Marketing – E-Advertising - Internet Marketing Trends – Target Markets – E-Branding – Marketing Strategies. - E-security – E-Payment Systems: E-Customer Relationship Management: E Supply Chain Management.

UNIT V   **Hours: 12**
E-Strategy: Information and Strategy – The Virtual Value Chain – Seven Dimensions of E-Commerce Strategy – Value Chain and E-Strategy – Planning the E-Commerce Project – E – Commerce Strategy and Knowledge Management – E-Business Strategy and Data Warehousing

and Data mining. Mobile Commerce:–Wireless Applications – Technologies for Mobile Commerce – WAP Programming Model – Wireless Technologies – Different Generations in Wireless Communication – Security issues Pertaining to Cellular Technology –M-Commerce in India. Customer – Effective Web Design:-Legal and Ethical Issues.

REFERENCE BOOKS:
1. Gary P. Schneider, E-Commerce Strategy, Technology and Implementation, CENGAGE Learning INDIA Private Limited,. Latest Edition (Unit-I: Chapter 1,2,3 Unit-II: Chapter 4,5,6,7, & III Chapter 8,9,10,11,12).
2. P.T. JOSEPH, E-Commerce an Indian Perspective Third Edition Prentice Hall of India, Latest Edition (Unit-IV: Chapter 4, 5,6,7,8 & V – Chapter 9, 10, 11, 12).
3. Mike Papazologn, E-Business, Organizational and Technical Foundations, Wiley India Pvt Ltd, 2008
4. Elias M. Awad, Electronic Commerce, Prentice-Hall of India, 2008
5. Kenneth C.Laudon, Carlo Guercio Traver E- Commerce-business, Technology, Society, Pearson Education 2009.

SEMESTER – II
ELECTIVE 1: MULTIMEDIA AND ITS APPLICATIONS

Subject Code: 16P2CSET1D   **Total Hrs:60**   **No. of Credits: 4**

Objectives:
To enable the students
- To learn about the concepts of Multimedia.
- To Understood the various animation techniques in multimedia.
- To learn about HDTV and Desktop Computing Technologies.

UNIT I   **Hours: 12**
What is Multimedia –Introduction to making Multimedia –Macintosh and Windows Production platforms –Basic Software tools.

UNIT II   **Hours: 12**
Making Instant Multimedia –Multimedia authoring tools –Multimedia building blocks – Text –Sound.

UNIT III   **Hours:12**
Images –Animation –Video.

UNIT IV   **Hours:12**
Multimedia and the Internet –The Internet and how it works –Tools for World Wide Web –Designing for the World Wide Web.

UNIT V   **Hours: 12**
High Definition Television and Desktop Computing –Knowledge based Multimedia systems.

REFERENCE BOOKS:

1.Tay Vaughan, "Multimedia making it work", Fifth Edition, Tata McGraw Hill.
2.John F. Koegel Bufford, "Multimedia Systems", Pearson Education.
3.Judith Jeffloate, "Multimedia in Practice (Technology and Applications)", PHI, 2003

SEMESTER – III

ELECTIVE 2: ENTERPRISE RESOURCE PLANNING

Subject Code: 16P3CSET2A   **Total Hrs:60**   **No. of Credits: 4**

Objectives:

- To undrstand capability to streamline the different organizational processes and work flows in ERP
- To learn about the improved efficiency, performance, and productivity levels of ERP
- To know the basics of ERP , key implementation, business modules and future trends in ERP.

UNIT 1   **Hours:12**

ERP: Introduction : Define – Functional Module in ERP System – Evolution of ERP Systems - Characteritics of ERP – Process Intergration With ERP Systems. Benefits of ERP Applications – Technology Behind ERP Systems. **ERP Market and Vendors:** ERP Market – ERP Vendors – Service Oriented Architecture - ERP Package features.

UNIT II   **Hours:12**

Extended ERP Services: Defining Extended ERP – SCM and ERP – ERP and BI – ERP and E-Commerce. **Business Process Re-engineering And ERP:** Defining Business Process Reengineering- Enterprise redesign principles – Business process reengineering - BPR and Change Management – Different Approaches BPR Implementaion – Methodology for BPR Implementaion – Role of IT in BPR – BPR and EPR Systems – BPR sucess / failure factors.

UNIT III   **Hours:12**

Planning for ERP – Planning for ERP Implementaion – Understanding Organizational Requirements. - Understanding Economic and Strategies Justification – Analysing Project Scope – Determing Resources – Creating Budget for ERP Implementaion – Selecting the Right ERP Package- Preparing Organizations for ERP Implementaion. **Implementation of ERP:** Designing for ERP systems – ERP implementaion approaches – ERP implementaion Life cycle.

UNIT IV   **Hours:12**

Managing ERP Projects: Risk Failure factors in ERP Implementaion – Examples of ERP Failure- Mitigating implementaion risks – Management and complexity of Large scale ERP Projects- Training users to use ERP Systems. - Evaluating ERP Projets.

UNIT V   **Hours:12**

ERP Going live and post implementaion: Preparing to go live – Strategies for migration – to new ERP systems – Go live performance surprises – Managing ERP after go live – Maintenance of ERP Systems. **Expanding ERP Boudaries:** Service oriented architecture – Enterprises application integration – Application Services provider – Model for ERP implementaion.

REERENCE BOOKS:

1. Ashim raj singla – Enterprise Resource Planning – Cengage Learning india Pvt . Ltd 2008.

SEMESTER – III
ELECTIVE 2: SOFTWARE TESTING

Subject Code: 16P3CSET2A   **Total Hrs:60**   **No. of Credits: 4**

OBJECTIVES:
- To understand the Software Testing.
- To discuss the distinctions between validation tests and defect testing.
- To describe the principles of system and component testing.
- To describe strategies for generating system test cases.
- To understand the essential characteristics of tool used for test automation.

UNIT I   **Hours:12**

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 II   **Hours:12**

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 of Testing – Scenario Testing – Defect Bash.

UNIT III   **Hours:12**

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.

UNIT IV   **Hours:12**

Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT V   **Hours:12**

Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.

REFERENCE BOOKS*:*
1. *Software Testing Principles and Practices, Srinivasan Desikan & Gopalswamy Ramesh, 2006, Pearson Education. (UNIT-I: 2.1-2.5, 3.1-3.4 UNIT-II: 4.1-4.4, 5.1-5.5 UNIT III: 6.1-6.7 (UNIT IV: 7.1-7.6, 8.1-8.5 UNIT-V: 15.1-15.6, 17.4-17.7)*
2. Effective Methods of Software Testing, William E. Perry, 3rd ed, Wiley India.
3. Software Testing, Renu Rajani, Pradeep Oak, 2007, TMH.

SEMESTER – III
ELECTIVE 2: COMPILER DESIGN

Subject Code: 16P3CSET2C   **Total Hrs:60**   **No. of Credits: 4**

To enable the students
- To learn the fundamentals of Compiler Designes
- To gain knowledge on High level Programming languages
- To gain an insight into the lexical Analysis components viz. the algorithms for implementation of finite automata
- To know the components and management aspects of parsing tables, types of Error and the methods Detection and Recovery

UNIT I   **Hours:12**

Introduction to Compilers: Compilers and Translators – The Structure of a Compiler Lexical Analysis – Syntax analysis – Intermediate Code generation – Optimization – Code generation– Book keeping – Error handling – Compiler writing tools. **Programming languages:** High level Programming languages– Definitions – lexical and Syntactic structure of a language – data elements data structures – operators – assignment – statements – program units – data environments – parameter transmission – storage management.

UNIT II   **Hours:12**

Finite Automata and lexical Analysis: The role of the lexical analyzer – simple approach – regular expressions –finite automata – from regular expressions to finite automata – minimizing the number of states – implementation of lexical analyzer.The Syntactic Specifications of programming languages : Context free Grammers – Derivations and Parse Trees – Capabilities of Context free Grammers. Basic Parsing Techniques: Parsers – Shift – reduce parsing – operator– precedence parsing – Top down parsing – Predictive parsers.

UNIT III   **Hours:12**

Automatic Constuction of Effective parsers : LR parsers – Canonical Collection of LR (0) items – Constructing SLR parsing tables – Constructing Canonical LR paqrsing tables – Constructing LALR parsing tables – Using ambiguous grammers – an automatic parser generator – Implemenatation of LR parsing tables – Constructing LALR sets of items.
Symbol tables : the Contents of a symbol tables – data structures – Representing scope information.

UNIT IV   **Hours:12**

Error Detection and Recovery : Errors – Lexical phase errors – Syntactic phase errors – Semantic errors. Introduction to Code Optimization :The principal sources of optimization – Loop Optimization – DAG representation of basic blocks – Value numbers and algebric laws– global data flow analysis.

UNIT V   **Hours:12**

Loop Optimization: Dominators - Reducible Flow graphs - depth first search - Loop invariant computations - Induction variable elimination - Some other loop optimizations. Code generation: object programs - Problems in code generation - A machine model - A simple code generator - Register allocation and assignment - Code generation from DAG's - Peephole Optimization.

REFERENCE BOOKS:
1. Principles of Compiler Design,Alfred V. Aho, Jeffrey D.Ullman,Narosa publishing house.
2. Compilers : Principles, Techniques and Tools (2nd Edition) by Alfred V.Aho and Monica S.Lam, Sep 10 , 2006.

SEMESTER – III

ELECTIVE 2: SOFTWARE PROJECT MANAGEMENT

Subject Code: 16P3CSET2D   **Total Hrs:60**   **No. of Credits: 4**

OBJECTIVES:
- To get knowledge of how to handle project development activities
- To understand the threats and opportunities in Project managements
- To study various project cost, time estimation models.
- To study how to make quality software products.
- To Appreciate management issues like team structure and group dynamics

UNIT - I   **Hours : 10**
    SOFTWARE PROJECT MANAGEMENT : Introduction, Need for Software Project Management – Software Project versus other projects – Overview of Project planning.

UNIT - II   **Hours:10**
    PROJECT EVALUATION : Introduction, Strategic assessment, Technical Assessment, Cost benefit Analysis, Cash flow forecasting, Cost benefit Evaluation Techniques Risk Evaluation – Selection of appropriate project planning.

UNIT III   **Hours:14**
    ACTIVITY PLANNING : Objectives of activity planning, Project schedules, Projects and activities, Sequencing and scheduling activities, Network Planning models –Formulating network models, Using dummy activities, Identifying critical path, identifying critical activities. Risk Analysis and Management: Nature of risk, Managing risk, Risk identification, Risk analysis, reducing the risks, evaluating the risks.

UNIT IV   **Hours:14**
    SOFTWARE EFFORT ESTIMATION: Problems with over and under estimate, the basis for software estimation, software estimation Techniques. Expert judgments, Estimating by analogy, Function point analysis. Resource Allocation: Identifying resource requirements, Scheduling resources, Monitoring and control, Managing people and organization teams.

UNIT V   **Hours:12**
    PROJECT MANAGEMENT : Project Management in the Testing phase – Introduction, test scheduling, test types, issues, management structures for testing, metrics for testing phase, Project Management in the Management phase – Introduction, activities, management issues, configuration management, estimating size, effort and people resources, advantages, metrics.

REFERENCE BOOKS:

1. Bob Hughes and Mike Cotterell, "Software Project Management", Hill 5th Edition, Tata McGraw
2. Gopalaswamy Ramesh, "Managing Global Software Projects", 2001, TMH.
3. Walker Royce, "Software Project Management", 1998, Addison Wesley
4. Stellman & Greener, "Applied software project management" SPD.

SEMESTER – IV
CORE 19 : PROJECT VIVA VOCE

Subject Code : 16P4CSCV19   **No of Credits : 20**

GUIDELINES FOR PROJECT WORK

- The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.

- Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.

- The project work should be compulsorily done in the college only under the supervision of the department staff concerned.

FINAL VIVA

- ➢ Project work carries 200 marks with 20 credits
- ➢ Internal Assessment: 160 marks (40 marks for 3 reviews and 40 marks for record) and External Assessment : 40 marks (Viva Voce)
- ➢ For awarding a pass, a candidate should have obtained 50% of the total 200 Marks.(Viva - Voce)
- ➢ The evaluation would be done jointly by both the examiners(Internal and External). Students who fail in the project work and viva-voce examination or who are absent for the project viva-voce who fail to submit the project report before the due date will have to re-submit the project work and appear for the viva-voce examination during the subsequent year.

<u>**PROJECT WORK**</u>

TITLE OF THE PROJECT
Bonafide Work Done by
STUDENT NAME
REG. NO.

Project submitted in partial fulfillment of the requirements

for the award of Mastor of Computer Science of
Bharathiar University,Coimbatore-46

College emblem

GUIDE   HOD

Submitted for the Viva-Voce Examination held on _____

Internal Examiner   External Examiner

MONTH – YEAR

<u>**CONTENTS**</u>

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CERTIFICATE

ACKNOWLDGEMENT

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SYNOPSIS

1. INTRODUCTION

     1.1 ORGANIZATION PROFILE

     1.2 SYSTEM SPECIFICATION

     1.2.1 HARDWARE CONFIGURATION

     1.2.2 SOFTWARE SPECIFICATION

2. SYSTEM STUDY

2.1 EXISTING SYSTEM

2.1.1 DRAWBACKS

2.2 PROPOSED SYSTEM

2.2.1 FEATURES

3. SYSTEM DESIGN AND DEVELOPMENT

3.1 FILE DESIGN

3.2 INPUT DESIGN

3.3 OUTPUT DESIGN

3.4 DATABASE DESIGN

3.5 SYSTEM DEVELOPMENT

3.5.1 DESCRIPTION OF MODULES

(Detailed explanation about the project work)

4. TESTING AND IMPLEMENTATION

5. CONCLUSION

BIBLIOGRAPHY

APPENDICES

A. DATA FLOW DIAGRAM

B. TABLE STRUCTURE

C. SAMPLE CODING

D. SAMPLE INPUT

E. SAMPLE OUTPUT

EXTRA CREDIT COURSES : FUZZY MATHEMATICS

Subject Code : 16PCSECC01   **No.of Credits : 2**

Objectives:
- To understand the concepts fuzzy sets and crisp sets
- To understand the concepts fuzzy Arithmetic and Fuzzy Relations.

UNIT I

From classcal sets to Fuzzy sets: Introduction-Crisp Sets: An over vieww-Fuzzy set: Basic types-Fuzzy sets: Basic Concepts-Characteristics and significance of the paradigm Shift

UNIT II

Fuzzy sets of versus crisp sets: Addtional properties of a- Cuts- Representations of fuzzy sets-Extension Principle of Fuzzy sets.

UNIT III

Operations on fuzzy sets: Types of Operations-Fuzzy complements-Fuzzy Intersections: t-Norms-Fuzzy unions: t-conorms

UNIT IV

Fuzzy Arithmetic: Fzzy Numbers-Lnguistic Variables-Arithmetic Operations on intervals

UNIT V

Fuzzy Relations: Crisp versus Fuzzy Relations-Projections and Cylndric Extensions-Binary Fuzzy Relations-Binary relations on a single set-Fuzzy Equvalence Relations-Fuzzy Compatibility Relations.

REFERENCE BOOK:
1. Fuzzy Sets Uncertanity and Information, George, J.Klir and Tina A, Folger, Printice Hall of India Pvt Ltd, New Delh, 2006
   UNIT 1: Page no: 1-30   **UNIT 2:** Page no: 35-48   **UNIT 3:** Page no: 50-96
   UNIT 4: Page no: 97-102 **UNIT 5:** Page no: 119-135
2. Fuzzy Logic Intellegence, Control and information, John Yuan, Reza Langari, Pearson Education, New Delh, 1999
3. Fuzzy logc and Neural Networks, M.Amirthavalli, Scitech Publications Pvt Ltd, Chennai and Hydrabad, 2007
4. Fuzzy Lgic with Engineering Applications, Timothy , Jo Ross, McGraw-Hill INC, New York, 1996.

EXTRA CREDIT COURSES : OPERATION RESEARCH

Subject Code : 16PCSECC02   **No.of Credits : 2**

Objectives:

- To understand the basic concepts of Operations Research and Solving LPP
- To solve Transportation and Assignment problems
- To understand the concept of Game theory , Queuing theory PERT and CPM.

UNIT I

Introduction to Operations Research - Meaning - Scope – Models - Limitation. Linear Programming - Formulation – Graphical method only.

UNIT II

Transportation (Non- degenerate only) - Assignment problems - Problems.

UNIT III

CPM - Principles - Construction of Network for projects – Types of Floats – Slack- crash programme.

UNIT IV

PERT - Time scale analysis - critical path - probability of completion of project - Advantages and Limitations.

UNIT V

Game Theory: Graphical Solution – mx2 and 2xn type. Solving game by Dominance property - fundamentals - problems . Replacement problem – Replacement of equipment that deteriorates gradually (value of money does not change with time).

* Questions in problems and theory carry 80% and 20% marks respectively.
REFERENCE BOOKS:

1. Prof. V. Sundaresan., K.S. Ganapathy Subaramanian ., K.Ganesan: Resource Management Techniques (Operations Research) A.R.Publications- 2002

Unit I   **:** Chapter 1 – Section 1.1,1.2,1.4,1.9, Chapter 2 – Section 2.1- 2.5
      Unit II   **:** Chapter 7 – Section 7.1- 7.2, Chapter 8 – Section 8.1 ,8.2,8.4,8.5
      Unit III   **:** Chapter 15 – Section 15.1,15.2,15.5,15.8
      Unit IV   **:** Chapter 15 – Section 15.6
      Unit V   **:** Chapter 16 – Section 16.6, 16.7, Chapter 11 – Section 11.1, 11.2

2. 1. Kanti Swarup, Gupta P.K, Man Mohan : Operations Research, Sultan Chand & Sons- 1997
3. P.R. Vittal and V.Malini : Operations Research, Margham Publications -2011.
4. P.K.Gupta.,ManMohan: Problems in Operations Research,Sultan Chand &sons-2004
5. V.K.Kapoor: Operations research, Sultan Chand&sons-2007

EXTRA CREDIT COURSES : FINANCIAL ACCOUNTING

Subject Code : 16PCSECC03   **No.of Credits : 2**

Objectives:
- To enable the students to learn principles and concepts of accountancy
- To make the students understand basic accounting framework
- To provide adequate knowledge on consignment, joint venture and depreciations

UNIT I

Fundamentals of Book Keeping- Accounting Concepts and Convention – Objectives of Accounting – Advantages of Accounting – Limitations of Accounting - Journal-Ledger - Subsidiary books - Trial balance- Errors and Rectification.

UNIT II

Final Accounts of a sole trader with adjustments - Trading Account – Profit and Loss Account – Balance sheet.

UNIT III

Accounts of Non Trading Concerns - Receipts and Payments Account - Income and Expenditure Accounts and Balance Sheet - Bank Reconciliation Statement.

UNIT IV

Accounting for Consignments – Account Sales – Valuation of Stock – Normal Loss – Abnormal Loss - Joint ventures – Joint Venture Vs. Consignment – Accounting for Joint Ventures – Separate books.

UNIT V

Accounting for depreciation –Methods of depreciation - Straight line method, Diminishing balance method, Annuity method – Single entry system – Single entry system Vs. Double entry system – Satement of Affairs method – Conversion method - Total Debtors – Total Creditors – Bills Receivable – Bills Payable.

Note: Distribution of marks between problems and theory shall be 80% and 20%.
REFERENCE BOOKS:
1. T.S.Reddy and Dr.A. Murthy:"Financial Accounting", Margham Publications, Chennai, Reprint 2016.
2. S.P.Jain and K.L.Narang: "Advanced Accountancy", Kalyani Publishers, New Delhi, 17th Revised Edition, 2011.
3. T.S. Grewal: "Introduction to Accountancy", Sultan Chand & Co., New Delhi, 8th Revised Edition, 2013.
4. K.L.Nagarajan, N.Vinayakam and P.L.Mani: "Principles of Accountancy", Eurosia Publishing House (Pvt) Ltd., New Delhi, Reprint 2010.
5. R.L.Gupta and M.Radhaswamy: "Advanced Accountancy", Sultan Chand & Sons, New Delhi, Reprint 2008.

EXTRA CREDIT COURSES: MANAGEMENT INFORMATION SYSTEM

Subject Code: 16PCSECC04   **No. of Credits: 2**

Objectives:
7. To familiarise the students with Business Information through Computers.
8. To enable the students aware of utilization of business information for decision making.
9. To bestow knowledge about Database Management System

UNIT I

Management information system: meaning – features – requisites of effective MIS – MIS Model – components – subsystems of an MIS – role and importance – corporate planning for MIS – growth of MIS in an organization – centralization vs decentralization of MIS - Support – Limitations of MIS.

UNIT II

System concepts – elements of system – characteristics of a system – types of system – categories of information system – system development life cycle – system enhancement.

UNIT III

Information systems in business and management: Transaction processing system: Information repeating and executive information system.

UNIT IV

Database management systems – conceptual presentation – client server architectures networks.

UNIT V

Functional management information system: Financial – accounting – marketing – production – Human resource – business process outsourcing.

REFERENCE BOOKS:
1. Gorden B.Davis and Margrethe H.Olson: "Management Information System", Tata McGraw Hill Publication, New Delhi, 1st Edition, 2005.
2. Aman Jindal: "Management Information system", Kalyani Publishers, New Delhi, 1st Edition, 2004
3. Kenneth C. Laudon: "Management Information System", Pearson Education, New Delhi, 1st Edition, 2004.
4. Stephen Haag: "Management Information System", Tata McGraw Hill Publication, New Delhi, 1st Edition, 2008.

EXTRA CREDIT COURSES : HUMAN RESOURCE MANAGEMENT

Subject Code : 16PCSECC05   **No.of Credits : 2**

Objectives
- To understand the nature of human resources and its significance to the organization
- To familiarise students with the various techniques in HRM that contribute to the overall effectiveness of an Organization.
- To bring the attention of the students on the latest trends in managing human resources in an organization.

UNIT I

Human Resource Management :   Definition – Objectives – Functions - evolution and growth of HRM– qualities of a good HR manager – changing roles of a HR Manager-– problems and challenges of a HR manager.

UNIT II

Planning the Human resources :   Definitions of human resource planning – objectives – steps in human resources planning – dealing with surplus and deficient man power - job analysis – job description – job specification.

UNIT III

Recruitment & Selection : Recruitment and selection – objectives of recruitment – sources – internal and external recruitment – application blank – testing – interviews.

UNIT IV

Training & Development : Training and development – principles of training – assessment of training needs – on the job training methods - off the job training methods – evaluation of effectiveness of training programmes.

UNIT V

Performance Appraisal : Performance appraisal– process – methods of performance appraisal – appraisal counseling – Motivation process – theories of motivation – managing grievances and discipline.

REFERENCES BOOKS:
1. Tripathi - Personnel Management, Sultan Chand & Sons, New Delhi, 2000
2. L M Prasad, Human Resource Management, Sultan Chand & Sons, New Delhi, 2005
3. Aswathappa, Human Resource Management, Tata Mc Graw Hill Publishing Company, New Delhi, 1999
4. Davis and Werther, Human Resource Management, Tata Mc Graw Hill Publishing Company, New Delhi, 2000

EXTRA CREDIT COURSES : PRINCIPLES OF MARKETING

Subject Code : 16PCSECC06   **No.of Credits : 2**

Objectives:
- To make the students understand about the modern marketing and marketing concepts
- To enlighten the students' knowledge on consumer behaviour and rights of consumers
- To provide knowledge on advertisement and its uses

UNIT I   **(15 Hrs)**

Marketing – Definition of Market and Marketing – Classification of Marketing- Marketing and selling,Objectives -Importance of Marketing – Modern Marketing Concepts - E-Marketing – Tele Marketing – Green Marketing- Service Marketing-Digital Marketing-Mobile Marketing-Social Media Marketing.

UNIT II   **(10 Hrs)**

Marketing Function – Buying – Selling – Transportation – Storage – Financing – Risk Bearing – Standardization – Marketing Information System.

UNIT III   **(12 Hrs)**

Marketing Mix – 7 'P's Marketing Mix-Product Mix – Product Life cycle – Branding – Labelling – Price Mix-Importance-Pricing Objectives – Pricing Strategies – Personal selling and Sales Promotion- Channels of Distribution-Functions of Middlemen-Place Mix.

UNIT IV   **(12 Hrs)**

Consumer Behaviour -Meaning- Need for studying Consumer Behaviour - Factors influencing Consumer Behaviour - Market Segmentation – Customer Relationship Marketing-Consumerism-Rights of Consumerism - Consumer Protection Council- Bureau of Indian Standards – AGMARK

UNIT V   **(11 Hrs)**

Meaning and Definition of Advertising - Objectives - Advantages of Advertising - Classification of Advertisement Copy-Advertising Media-Advertising Agencies.

REFERENCE BOOKS:
1. R.S.N. Pillai and Bagavathi: "Modern Marketing Principles and Practices", S.Chand & Co., Ltd., New Delhi,Edition 2011.
2. Philip Kotler and Gary Armstrong: "Principles of Marketing", Pearson Eduction Pvt., Ltd.,New Delhi.Edition 2012.
3. S.A. Shelekar: "Marketing Management" Himalaya Publishing House, New Delhi, 13th Edition Reprint 2010.
4. Dr.C.B. Gupta and Dr.N, Rajan Nair: "Marketing Management", S.Chand & Sons, New Delhi, 7th Edition Reprint 2000.