MANDATORY DISCLOSURE BY INSTITUTIONS RUNNING AICTE APPROVED ENGINEERING/TECHNOLOGY PROGRAMMES TO BE INCLUDED IN THEIR RESPECTIVE INFORMATION BROCHURE, DISPLAYED ON THEIR WEBSITE AND TO BE SUBMITTED TO AICTE EVERY YEAR.

"The information has been provided by the concerned institution and the onus of authenticity lies with the institution and not on AICTE."

I. NAME OF THE INSTITUTION

- Address including telephone, Fax, e-mail.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY
NH-5, By-Pass Road,
GUDUR,
Nellore (District)
Andhra Pradesh
Phone No: 08624 – 272042, 9247047501
Fax : 08624 – and 08624 - 220230
E-Mail: audisankaracet@gmail.com
Website:www.audisankara.com

II. NAME & ADDRESS OF THE PRINCIPAL

- Address including telephone, Fax, e-mail.

Dr . V.Krishnakumar
PRINCIPAL
Audisankara College of Engineering & Technology
NH – 5, By – Pass road
GUDUR
Nellore (Dist)
Andrapradesh
E-mail : principal.audisankara@gmail.com
Mobile : 9248748418

III. NAME OF THE AFFILIATING UNIVERSITY:

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
Ananthapuramu
Andhra Pradesh
Pin: 515002

IV. GOVERNANCE

❖ **Members of the board and their brief background**

(a) Composition of Governing Council of the Institution at present.

S.No	Name of the Governing Council Member		
1.	Prof.V.Jaya rami Reddy	Ex.Secretary APSCHE, Hyderabad	-Chairman
2.	Mrs. V.Prasuna	President Aishwarya Vignan Educational Society	- Member
3.	Dr.Vanki Penchalaiah	Secretary, Aishwarya Vignan Educational Society	- Member
4	Smt.V.Aravinda	Vice-President, Aishwarya Vignan Educational Society	- Member
5	Ms.V.Anusha	Vice-President, Aishwarya Vignan Educational Society	- Member
6	DR M.R.Kodali	Professor, EEE Department, ASCET	- Member
7	Dr L.Kalappa	Professor, EEE Department, ASCET	- Member
8	Dr.A.Jagadeesh	Director, Nayudamma center for development of aletnatives Energies	- Member
9	Mr.Y.Vidya Sagar	Managing Director, Cifal Herbal Pvt Ltd	- Member
10	Sri J.P. Singh Joorel	UGC Nominee	- Member
11	Southern Regional Officer, Regional Office, AICTE, Hyderabad	**AICTE Representative**	- Member
12	Dr.T.Narayana Principal, Govt., Polytechnic for Womens Nellore	**State Govt. Representative**	- Member
13	Dr.H.Sudharshana Rao Rector JNTUA, Ananthapuramu.	**JNTUA Representative**	- Member
14	Dr.V.Krishnakumar	Principal Audisankara college of engineering& Technology	Member Secretary

(b) Number of meetings held during last three years.

5 Governing Body meetings were conducted

(c) Date of the meeting held during last one year.

14th November 2014

- **Members of Academic Advisory Body:**

1) The College has constituted an Academic Council consisting of all the Heads of Departments, Professors, Deans, as Members to discuss and decide about all important academic matters, such as Teaching-Learning Process, Lesson Plans, Course Plans, Laboratory Manuals, Course Material (OHP Transparencies), Tutorial Classes, Home Assignments, Project Seminars by Faculty Members, Guest Lectures, Quizzes, Educational Video Cassettes & CDs, Analysis of the Examination Results and Remedial Classes, Class Review Committee Meetings, Industrial Visits & Attendance and Internal Assessment.

2) The College has also formed Departmental Advisory Committees for each Undergraduate Programme. The constitution of the Committees is as follows:
Principal
Concerned HOD
2–4 faculties from the Department
Eminent persons from industry and academic

College Academic Committee:

College Academic Committee (CAC) of Audisankara College of Engineerin & Technology is constituted with the following members.

1. Dean (Academics)	- Convener
2. HOD – Civil Dept	- Member
3. HOD – EEE Dept	- Member
3. HOD – ECE Dept	- Member
4. HOD – CSE Dept	- Member
5. Controller of Examinations	-Member
6. HOD – H&S Dept	- Member
7. HOD – MBA Dept	- Member
8. HOD – MCA Dept	- Member

The Dean (Academics) the College Academic Committee meetings as necessary to discuss and decide matters related to

(i) Attendance Shortage of students
(ii) Disciplinary cases of students
(iii) Disciplinary cases of faculty and staff

The Dean (Academics) is authorized

(i) to implement the decision of CAC regarding disciplinary matters, and
(ii) to recommend to the Principal for condonation of shortage of attendance

Research and Faculty Development Committee:

A "Research and Faculty Development Committee" is constituted with the purpose of encouraging Research activities and Qualifications enhancement by the Faculty of Audisankara College of Engineering & Technology

The Committee consists of:

1. Prof. Gnanamurthy	Convener
2. Prof. K.Dhanunjaya	Member
2. Prof. J.Suresh	Member
3. Prof.C.Rajendra	Member

- **Frequency of the Academic Advisory Body Meetings**

Board Meetings:

- The Members of the Board meet once in three months.

Advisory Committees:

- The Departmental Advisory Committee meets once/twice in a year.

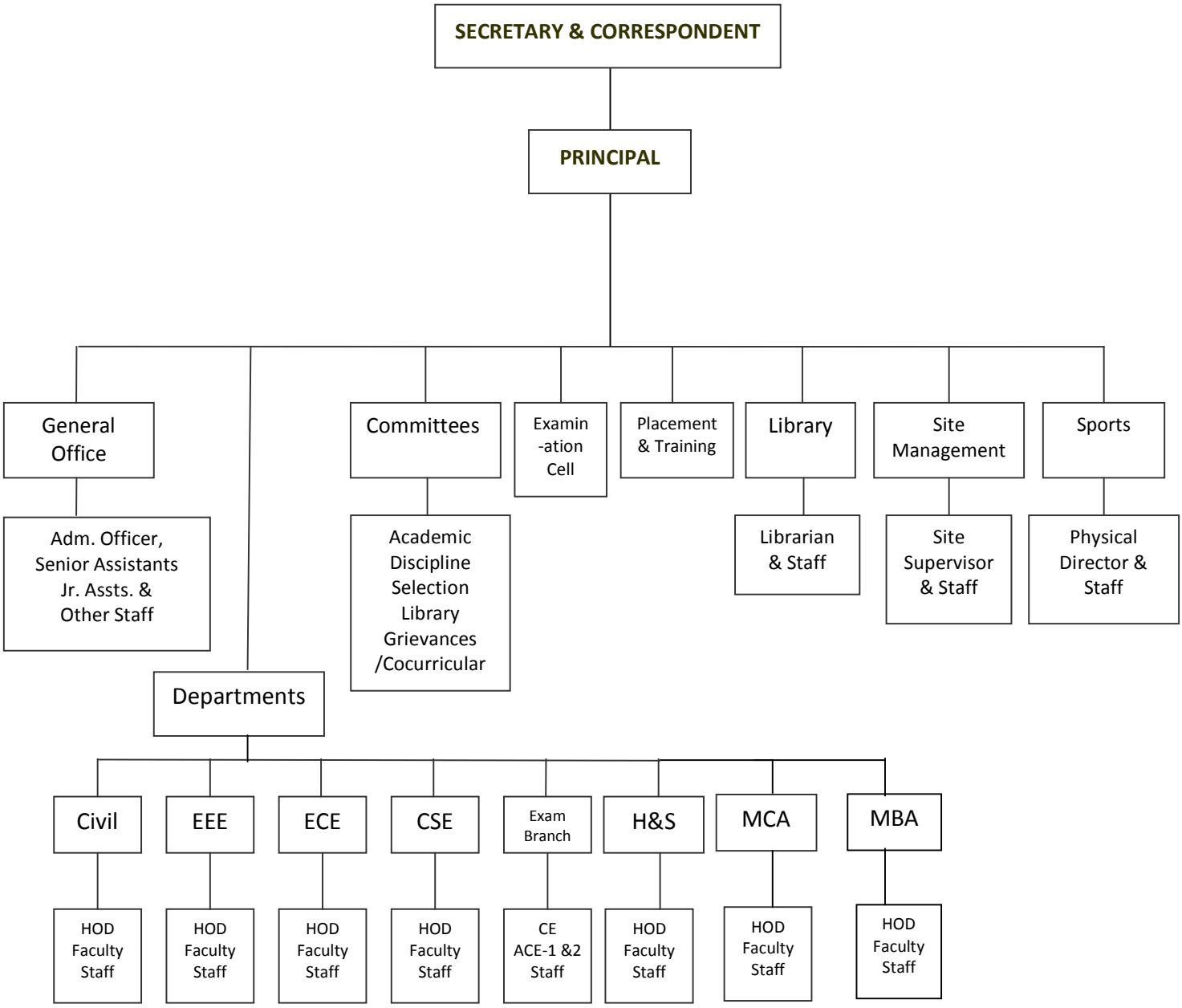
Academic Advisory Body:

- The Academic Advisory Body will meet twice every fortnight or more frequently, if required.

❖ **ORGANIZATION :**

The Management and the Principal provide the leadership in expanding the College, and motivating the Faculty and Staff to make the Sai Spurthi Institute of Technology, an Institute of Excellence in Technical Education through continual improvement.

Organization Chart is given below.



❖ **Nature and Extent of involvement of faculty and students in academic affairs/improvements**

Faculty and HOD's meet frequently in their respective departments to discuss about important academic matters, Teaching-Learning Process, Lesson Plans, Course Plans, Laboratory Manuals, Course Material (OHP Transparencies), Tutorial Classes, Home Assignments, Project Seminars by Students, Seminars by Faculty Members, Guest Lectures, Quizzes, Educational Video Cassets & CDs, Analysis of the Examination Results and Remedial Classes.

Faculty and students meet every month in Class Review Committee Meetings.

- **Functions of the Secretary & Correspondent:**

  The following are the major functions.

  - Monitoring the administrative functioning of the College
  - Sanctioning approval of estimates & expenditure and release of funds for amounts beyond the financial powers vested with the Principal
  - Providing the financial support as per the needs of the institute
  - Appointments of both teaching and non-teaching staff on adhoc basis based on the recommendations of College Selection Committee, constituted by the Principal.
  - Approval the budget as per the recommendations of College Academic Committee.

Delegation of Administrative and Financial Powers:

- Principal is the academician as well as the administrative head of the institution. On academic matters, he is, in general guided by the rules and regulations as per the norms laid down by the AICTE and JNT University and the College Academic Committee. In addition, he is assisted by the Heads of the Departments, the Librarian and the Director of Physical Education and the Academic & Examinations Branch, Site Maintenance Cell, besides the various committees listed below:
  - Finance & Budget Committee
  - Purchase Committee
  - Grievances' Redressal Committee
  - Discipline Committee

- **Financial Powers of the Principal:**
  - The Principal is empowered to approve estimated expenditure upto a maximum of Rs.50,000/-.
  - He is authorized to sign/approve all purchase orders/work orders which have been decided by appropriate committees.
  - The Heads of Departments, Coordinators and Functional Heads operate an imprest of Rs.10,000/- each, which they can be spent on essential consumables and spares.

- **Service Rules:**
  - The formal service rules are in operation to regulate the working and service conditions including leave rules, etc.

- **Recruitment of teaching and non-teaching staff:**

  Teaching staff:
  - Direct recruitment of teaching staff at the level of Professors, Associate Professors (Assistant Professors as per AICTE nomenclature), Assistant Professors (Lecturers as per AICTE nomenclature) is done by inviting applications from eligible candidates through an advertisement in important National Daily Newspapers, conducting a written test, if necessary and then conducting an interview for the short-listed candidates. The interview is conducted by a duly constituted selection committee consisting of a Government Nominee, two University Nominees, atleast two subject experts nominated by the University, management representatives, Principal and the Head of the Department concerned.

  - The minimum educational qualifications and experience, as prescribed by the AICTE from time to time, are strictly followed. The Chairman of the selection committee for Professor's and Associate Professor's is Vice-Chancellor, JNT University (affiliating University), or his nominee, while in the case of Assistant Professor's interviews, it is the President of V.Prasuna Aishwarya Vignan Educational Society, who is also the Chairman of the Governing Body of this College.

  - Temporary vacancies at the level of Assistant Professor are filled through a Walk-in-Interview through an advertisement in local dailies, or by constituting a college selection committee. In both the cases, there will be external subject expert(s), the Principal and the Head of the Department concerned in the selection committee. Candidates so selected are appointed on an Adhoc basis and will have to get regularized later, by appearing before a duly constituted selection committee, and getting selected as and when the post is advertised for direct recruitment.

  - Senior positions at the level of Professors, Associate Professor are also filled by inviting qualified retired persons from teaching institutions of repute, or persons with experience from industry, on contract basis for a specified period. The institute has also the provision of appointing persons of eminence in the field of education and from industry as visiting faculty/Adjunct faculty.

  Direct recruitment of non-teaching staff:
  - Direct recruitment of non-teaching staff is done by inviting applications from eligible candidates through an advertisement in regional newspapers, conducting a written test, trade test and finally an interview before a selection committee comprising of a Government Nominee, Management Members, Principal and the Head of the

Department concerned. The selection committee will be chaired by the Chairman or the Secretary of the Governing Body of the College.

- **Staff development**

Faculty:

- ASCET, in its continual pursuit of strengthening teaching-learning process and quality improvement, has introduced staff development programmes. These allow deputation of teaching staff to M.Tech and Ph.D programmes. Candidates who wish to pursue these programmes will be short-listed by the Staff Development Committee (SDC) constituted for this purpose. The Committee will examine the individual cases and would make its recommendations based on the following criteria
  a) Specialization requirement in the Department.
  b) Length of service and contribution of the staff member concerned to the Department/Institution.
  c) Whether the programme (Ph.D/M.Tech) is part time or full time. Number of persons already deputed in that area of specialization.
  d) Number of faculty from that Department already on deputation for higher studies
  e) Number persons already deputed in that area of specialization.

- The recommendations of the SDC in this regard will be submitted to the Governing Body of the college for approval and final decision. Preference will be given for Doctoral Programmes and deputation of any faculty member must be without detriment to the academic work of the college.

NON-TEACHING STAFF:

i) Technical supporting staff will also be deputed for short-term training programmes either for acquiring new skills or for improving their existing skills, if such a deputation is recommended by the Head of the concerned Department and if it is considered necessary in the interest of the institution.
ii) Arranging in-house training programme for communication skills, particularly skills of writing, with the help of the Department of Humanities & Sciences.
iii) Arranging short-term training programmes by way of requesting resource persons, including the retired senior Government Officials with experience in administrative and accounts areas. The training programme covers different functional, technical and administrative skills as required by the office of a private Engineering Institution.
iv) Arranging training programmes for giving adequate working knowledge on computers to instructional and administrative staff, utilizing the services of CSE faculty & supporting staff.

- **Student Feedback on Institutional Governance/faculty performance**
  - **Student Feedback:**
    - Feedback from the Final Year students passing out from the College as well as those passed out earlier (Alumni) is being taken to ascertain their views/suggestions for college development, viz., infrastructure & laboratory support, teaching-learning process, value added programmes conducted by college, guidance to their juniors, etc.

  - **On Faculty performance**
    - Feedback in a structured form is obtained from all the students twice in a year to evaluate teaching-learning process in respect of the subjects taught by each faculty.

    - Each parameter is quantified and rated a 4-point rating scale. After compilation, the summary of the feedback showing their rating against each parameter and the overall rating against the 'set threshold level' is communicated through the Head of the Department to the respective faculty to strive for improvement in the areas rated below threshold level.

- **Grievance redressal mechanism for faculty, staff and students**
  - **For Faculty & Staff:**
    - In order to provide a mechanism for speedy redressal of genuine grievances of faculty and staff, this College has a 'Grievances Redressal Committee' constituted.

    - Any grievance reported by a faculty member to the Principal will be referred to this Committee, which will give its recommendations after making an in-depth enquiry and study.
    - A Grievances & Redressal Committee, consisting of Principal as the Chairman and HOD/Coordinator/Officer-in-Charge of concerned Department as Members.
  - **For Students:**
    - Principal deals with all matters concerning student affairs, viz., identity cards, bus and canteen amenities, emergency medical needs, anti-ragging measures, induction programme, etc.

    - Each student is kept under the care of one faculty member known as 'Proctor' who will monitor their wards' punctuality and regularity of attendance, their academic progress, arrange tutorials for the students lagging behind in academics, encourage them to avail the lab and library facilities to the fullest extent and guide them on the new technology in their fields, etc.

    - The Proctors also interact with the parents of their wards periodically and bring to their notice regarding the absenteeism and low academic performance of their children to enable them to take corrective measures.

- Principal is the Chief Proctor who reviews the progress of the Proctor-Student meetings and gives direction and guidelines to the Proctors from time to time.

- Suggestion Boxes are kept at all the prominent places in the campus to encourage students to suggest measures requiring attention of the college authorities in respect of matters concerning academic and student amenities.

V. PROGRAMMES

❖ **Name of the Programmes approved by the AICTE**

S. No.	Course(s)
1.	B.Tech., Civil Engineering
2.	B.Tech., Electrical & Electronics Engineering
3.	B.Tech., Electronics & Communication Engineering
4.	B.Tech., Computer Science & Engineering
5.	B.Tech., Mechnaical Engineering
6.	Master of Computer Applications
7.	Master of Business Administration
8.	M.Tech., VLSI
9.	M.Tech., Computer Science & Engineering
10.	M.Tech., Embedded Systems
11.	M.Tech., Software Engineering
12.	M.Tech., Power Electronics
13.	M.Tech., Electrical Power Systems

Name of the Programmes accredited by the AICTE

S. No.	Course(s)	Status of Accreditation
1	B.Tech., Electrical & Electronics Engineering	**3 years**
2	B.Tech., Electronics & Communication Engineering	**3 years**
3	B.Tech., Computer Science & Engineering	**3 years**

Name of Branch	**Civil**	**EEE**	**ECE**	**CSE**	**ME**
Number of seats	120	120	240	120	60
Duration	4 years	4 years	4 years	4 years	4 years
Cut off mark/rank for admission during the last three years	**As per the regulations of the Convener, EAMCET, Andhra Pradesh**				

State Government Rules

- **Fee**
  - **AS PER AP STATE GOVERNMENT RULES**
- **Placement Facilities**
  - The college has a placement cell to which students of the final year are adviced to register. All the registered students are given training in soft skills and their resumes are forwarded to the various companies for jobs. Subsequently the students are sent for Interviews.

    Campus placement in last three years with minimum salary, maximum salary and average salary

Name and duration of programme(s) having affiliation/collaboration with Foreign University(s)/Institution(s) and being run in the same Campus along with status of their AICTE approval. If there is foreign collaboration, give the following details:

Details of the Foreign Institution/University:

- Name of the University/Institution
- Address
- Website
- Is the Institution/University Accredited in its Home Country
- Ranking of the Institution/University in the Home Country
- Whether the degree offered is equivalent to an Indian Degree? If yes, the name of the agency which has approved equivalence. If no, implications for students in terms of pursuit of higher studies in India and abroad and job both within and outside the country.
- Nature of Collaboration
- Conditions of Collaboration
- Complete details of payment a student has to make to get the full benefit of collaboration.

❖ For each Collaborative/affiliated Programme give the following: NIL

(Details under this category are not applicable).

- Programme Syllabus
- Number of seats
- Admission Procedure
- Fee
- Placement Facility
- Placement Records for last three years with minimum salary, maximum salary and average salary

NOT APPLICABLE

- Whether the Collaborative Programme is approved by AICTE? If not whether the Domestic/Foreign Institution has applied to AICTE for approval as required under notification no. 37-3/Legal/2005 dated 16th May, 2005

VI. FACULTY

Branch wise list of faculty members:

ANNEXURE-I

- **Number of faculty employed and left during the last three years**

  About 80 Staff Members left in last three years. Since most of them left for pursuing higher education and also for better prospects in the IT and Software Industry.

VII . PROFILE OF PRINCIPAL WITH QUALIFICATIONS, TOTAL EXPERIENCE, AGE AND DURATION OF EMPLOYMENT AT THE INSTITUTE

1. Name	**Dr. V.KRISHNAKUMAR**
e-mail id	principal.audisankara@gmail.com
2. Previous Employment as	**THE PRINCIPAL** VIVEKANANDHA ENGINEERING COLLEGE FOR WOMEN (Formerly RABINDARANATH TAGOORE COLLEGE OF ENGINEERING FOR WOMEN), SANKARI WEST, SANKARI TALUK, SALEM-637303
3. Residential address:	
Present Address with Phone Nos.	**404 ,Ananda Nilayam,** **Patel Street,** **Gudur-524101.Nellere,AP**
Permanent Address	57, Rangasamy Naidu Layout, Lakshmipuram, Peelamedu, Coimbatore – 641 004.
4. Marital Status	Married
5. Date of birth and age	02.02.1964 & 51 Yrs.

6. Educational qualifications

Programme / Specialization	Class & Percentage of marks	Month & Year of passing	College
Ph.D in Textile Technology	**Highly Commended (KNITTING)**	March 2005	PSG COLLEGE OF TECHNOLOGY,CBE
M.Tech Textile Technology	**First class 70.7%**	February 1997	PSG COLLEGE OF TECHNOLOGY,CBE
B.Tech Textile Technology	**First class 68.4%**	November 1993	PSG COLLEGE OF TECHNOLOGY,CBE
DTT	**First class 75%**	May 1982	PSG POLYTECHNIC COLLEGE,CBE

7. **Professional Experience**

- **AS PRINCIPAL-9 YEARS and total academic experience (16years 10 months)**

Sl. No	Designation	Name and Address of the Institution	From	To	Total no. of years
1	**Principal**	**AUDI SANKARA COLLEGE OF ENGINEERING &TECHNOLOGY,GUDUR**	**02-11-2014**	**onwards**	**0Y 07M**
2	**Principal**	Vivekanandha Engineering College for Women (Formrly-Rabindaranath Tagore College of Engineering for Women), Salem	**04-11-2010**	**18-09-2014**	**03 Y 10 M**
3	**Principal**	Vivekanandha Institute of Engineering and Technology for Women, Tiruchengodu	**23-05-2007**	**03-11-2010**	**03 Y- 05 M**
4	**Principal**	**AUDI SANKARA COLLEGE OF ENGINEERING &TECHNOLOGY,GUDUR**	**01-08-2005**	**22-05-2007**	**01 Y- 10 M**
5	**Asst. Professor**	Kumaraguru College of Technology, (**KCT**)Coimbatore	**01.08.2003**	**30.07.2005**	**02 Y- 00 M**
6	**Senior Lecturer**		**08.06.1998**	**31.07.2003**	**05 Y- 02 M**
TOTAL EXPERIENCE (ACADEMIC)					**16Y - 10 M**

- ***Industrial Experience (15Y- 05M)***

Sl. No	Designation & Nature of job	Name of Industry and Address	From	To	Total no. of years
1.	Factory Manager	VMD Mills (P) Ltd., Palladam, Coimbatore	**12.09.1995**	**18.02.1998**	**02 Y- 05 M**
2.	Asst. Manager (Production)	Flora Textiles Ltd., Coimbatore	**02.03.1995**	**11.09.1995**	**00 Y- 06 M**
3.	Supervisor (Weaving & Spinning) (Technical)	National Textile Corporation (TN&P) Ltd., Coimbatore	**10.03.1983**	**01.03.1995**	**12 Y- 00 M**
.	Supervisor Trainee	Arcot Mills Ltd., Kallakurichi	**17.09.1982**	**28.02.1983**	**00 Y- 06 M**
TOTAL EXPERIENCE (INDUSTRY)					**15 Y- 05 M**

8. Papers Presentation at National / International level.

Sl.No	Title of the Paper	Name of the Conference/ Seminar	Organizer	Date of Presentation
01	Preparation of lesson plan	QIP	Kumaraguru College of Technology, (KCT) Educational TrainingCenter	04-06-1999-05-06-1999
02	Modern Developments in Winding	NCUTE Extension Programme on "Yarn Winding"	KCT, Cbe.	10th & 11th Dec 1999
03	Air-Jet weaving machines	NCUTE Extension Programme on "Weaving II Shuttleless Looms	KCT, Cbe.	18th & 19th Feb. 2000
04	Multi-Phase Weaving Machines	NCUTE Extension Programme on "Weaving II Shuttleless Looms	KCT, Cbe.	18th & 19th Feb. 2000
05	Modern Developments in Weaving	Weavers Training Programme	SITRA-Power loom service center,Erode	28th July 2000
06	Maintenance Techniques for Open end spinning	NCUTE HRD Programme on "Maintenance Management in Spinning	KCT, Cbe	5th & 6th Jan. 2001
07	Power house and	For M.Tech : (Textile		15th Nov 2002

	electrical maintenance in Textile Industry	Technology) students	KCT, Cbe.	
08	Shuttle less loom technology	SITRA Workshop	Textile Commissoner Office, & SITRA, PLSC	5th October 2003
09	Entrepreneurship Developments in Textile Industry	Entrepreneurship Development Programme	Entrepreneurship Development Institute (EDI), Chennai,	7th March 2003
10	Energy management in Ring and rotor spinning Industry	Training programme	KCT, SIMA, PCRA	21st March 2003
11	Sewing Threads	NCUTE Programme,	KSR Engg. College Tiruchengode	21st June, 2003
12	Modern Developments in Ring Spinning	Yarn Engineering	KCT,Cbe	23rd July 2003
13	Yarn Twist liveliness & Spirality of Knitted fabrics	**2nd INDO-CZECH Conference**	TUL Liberec, Czech & KCT,Cbe	29th November 2003
14	Zero defect fabrics – possibilities in shuttle less weaving	NCUTE Programme	Bannari Institute of Technology, Sathyamangalam	8th January 2004
15	A Novel technique for measuring yarn twist liveliness	Annual convention of Institution of Engineers	PSG College of Technology, Coimbatore	20th April 2004
16	Effect of fibre quality index on spirality of weft-knitted fabrics	**3rd INDO-CZECH Conference**	TUL Liberec, Czech & KCT,Cbe	15th June 2004
Sl.No	**Title of the Paper**	**Name of the Conference/ Seminar**	**Organizer**	**Date of Presentation**
17	Wet spinning technique for the reduction of spirality in weft knitted fabrics	**HP-TEX International Textile Conference**	KCT, Cbe	8th July 2004
18	Glimpses of INDIA – ITME 2004	IIPC Seminar	IIPC. KCT, Cbe	23rd December 2004
19	Textiles for Aero Space Technology	Faculty Development Programme	Bannari Institute of Technology, Sathyamangalam	3rd February 2005
20	Rotor Spinning Technology	Faculty Development Programme	Bannari Institute of Technology, Sathyamangalam	3rd March 2005

21	Fibre Migration in wet spun yarn	**ATNT-2007 International Conference**	Kumaraguru College of Technology,CBE	**18-06-2007**
22	Teaching Methodologies	**VIETW-FDP**	Vivekanandha Institute of E&T forWomen	**16-08-2008 to18-08-2008**
23	Teaching Strategy	**Faculty Orientation Programme**	VCEW	**10-05-2009 &11-05-2009**
24	Time Management and Attitude	**Special training Programme for Senior professors**	VIETW	**20-11-2009 to25-11-2009**
25	Change is Inevitable	**QIP**	VEI	**03-01-2010 to 06-01-2010**
26	VISUALISATION OF SSS MATERIALS	**SDP-AICTE**	VIETW	**16-05-2011 to29-05-2011**
27	Faculty Training on Teaching Methodology	**FDP**	VEI	**07-06-2011 To 09-06-2011**
28	Faculty Training on Teaching Techniques	**FDP**	VEI	**05-07-2012**
29	Staff Development on Teaching Aids	**FDP-VEI**	VCTW	**11-07-2012**
30	Shuttle less Weaving	**Textile association of India-SSM Chapter**	SSM,Komarapalayam	**30-01-2013**

Authored 2 books on Machinery Maintenance through NCUTE ,New Delhi and presently having

Membership in Academic Bodies:

Member in the Board of studies in **Anna University Textile Technology Board, Examiner in AU PhD Board and QP setter for various University exams.**
Chairman of Textile Board in 2 Autonomous Engineering Colleges
NCUTE(New Dehi)academic council member
TAI academic Council Member

PROFESSIONAL SOCIETY MEMBERSHIP
CSI ,ISTE,IEEE AND IE MEMBER

PROJECTS WITH AICTE FINANCIAL GRANT

1. AICTE grant for 3projects-

2. 3.5 Lakh FOR ORGANISING SDP ON VISUALISATION OF SSS MATERIALS@VIETW

3. 7.0 Lakh FOR ORGANISING SDP ON WIRELESS COMMUNICATION @VECW

4. 3.5 Lakh FOR ORGANISING SDP ON CLOUD COMPUTING@VECW

5. DSIR Project to the tune of 4 lakhs was executed in ASCET,AP in March-2007.

AWARDS RECEIVED

2. **RIETER INTERNATIONAL PROJECT AWARD (2005)** for the UG project guided at KCT in the year 2005.
3. TIFAC-CORE AWARD@KCT2005

VIII. FEE

Name	**No.of seats**	**Duration**	**CET Quota fee* (Rs.)**	**Mgmt. Quota fee* (Rs.)**
Computer Science and Engineering	120	4 Yrs.	56,500	56,500
Civil Engineering	120	4 Yrs.	56,500	56,500
Electronics & Communication Engineering	240	4 Yrs.	56,500	56,500
Electrical and Electronics Engineering	120	4 Yrs.	56,500	56,500
Mechanical Engineering			56,500	56,500
MCA	60	3 Yrs.	29,500	29,500
MBA	60	2 Yrs.	28,400	28,400
M.Tech (Computer Science & Engg)	36	2 Yrs.	57,800	57,800
M.Tech (Software Engg)	18	2 Yrs.	57,800	57,800
M.Tech (VLSI)	18	2 Yrs.	57,800	57,800
M.Tech (Embedded Systems)	18	2 Yrs.	57,800	57,800
M.Tech (Power Electronics)	18	2 Yrs.	57,800	57,800
M.Tech (Electrical Power Systems)	18	2 Yrs.	57,800	57,800

* The fee details for B.Tech. Programmes are applicable for the admissions 2013-14 onwards.

❖ **Time schedule for payment of fee for the entire programme**

Yearly fee payable within 15 days; and with additional grace period of 15 days.

❖ **No. of scholarships offered by the Institute, duration and amount**

- The college is extending Financial Assistance Scheme to the students hailing from economically weaker sections to better their academic performance. This financial assistance is extended

irrespective of the caste, colour, creed, birth, language and religion. The assistance is in the form of fee consession from 50% to 100%.

- **Criteria for fee waivers/scholarship**

  - SC,ST Scholarship holders who don't receive fee reimbursement from Social Welfare Department due to readmission (after detention) are given 80% fee waiver.

  - Fee waiver in full or partially given to the economically indigent students basing on performance in studies, etc.

- **Estimated cost of Boarding and Lodging in Hostels.**

  - FOR BOYS-24,000 Per Annum

  - FOR GIRLS-24,000 Per Annum

IX. ADMISSION:

AICTE Approved Intake during last 4 years								
Courses	2011-2012		2012-2013		2013-2014		2014-2015	
	Sanctioned intake	Actual admissions	Sanctioned intake	Actual admissions	Sanctioned intake	Actual admissions	Sanctioned intake	Actual admissions
B.Tech (ECE)	**180**	**176**	**180**	**167**	**240**	**181**	**240**	**144**
B.Tech (EEE)	**120**	**114**	**120**	**101**	**120**	**69**	**120**	**49**
B.Tech (CSE)	**120**	**116**	**120**	**117**	**120**	**54**	**120**	**82**
B.Tech (Civil)	**60**	**60**	**60**	**58**	**120**	**112**	**120**	**93**
B.Tech (Mechanical)	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**60**	**59**
M.Tech (CSE)	**36**	**33**	**36**	**36**	**36**	**24**	**36**	**4**
M.Tech (SE)	**18**	**4**	**18**	**9**	**18**	**11**	**18**	**0**
M.Tech (ES)	**18**	**7**	**18**	**15**	**18**	**18**	**18**	**10**
M.Tech (VLSI)	**18**	**18**	**18**	**12**	**18**	**17**	**18**	**10**
M.Tech (EPS)	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**18**	**5**
M.Tech (PE)	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**Nil**	**18**	**4**
MBA	**60**	**59**	**60**	**54**	**60**	**52**	**60**	**55**
MCA	**60**	**51**	**60**	**47**	**60**	**39**	**60**	**22**

- Number of applications received during last two years for admission under Management Quota and number admitted.

Year	No. of Applications Received	No. of Students Admitted
2008-09	210	172
2008-09	175	135

X. ADMISSION PROCEDURE:

1. a) Name of the Admission Test : EAMCET (for B.Tech)

b) Name and Address **<u>For B.Tech:</u>**
The Convener,
EAMCET-2014 (Admissions); Sankethika Vidya Bhavan
Masab Tank, Hyderabad – 500 028

c) website www.apeamcet.org

The state government announces the competent authority to conduct the admission test each year. The above address relates to the current academic year 2014-15 admissions.

2. No. of seats allotted to different test qualified candidates separately:

S.No.	Course	StateGovt., EAMCET	Management Quota	Total Intake
1	B. Tech for 2014-15: I year	324	105	429
	II year	34	Nil	34

❖ **Calendar for admission against management/vacant seats:**

- Last date for request for applications.
- Last date for submission of application.
- Dates for announcing final results.
- Release of admission list (main list and waiting list should be announced on the same day)
- Date for acceptance by the candidate (time given should in no case be less than 15 days)
- Last date for closing of admission.
- Starting of the Academic session.
- The waiting list should be activated only on the expiry of date of main list.
- The policy of refund of the fee, in case of withdrawal, should be clearly notified.

- **As per state Government/University Guidelines**

XI. CRITERIA AND WIGHTAGES FOR ADMISSION

❖ Describe each criteria with its respective weightages i.e., Admission Test, Marks in qualifying examination, etc.

❖ Mention the minimum level of acceptance, if any.

❖ Mention the cut-off levels of percentage & percentile scores of the candidates in the admission test for the last three years

❖ Display marks scored in Test etc., and in aggregate for all candidates who were admitted.

- The Convener Quota seats will be filled up by Convener through a Common Entrance Test for the entire State. The minimum qualifying percentage in the Entrance Test is 30%. Based on the ranks secured by the students, Convener will fill-up the seats

XII. APPLICATION FORM

- Application forms are called by the Convener, EAMCET.

XIII. LIST OF APPLICANTS

- List of candidates whose applications have been received along with percentile/percentage score for each of the qualifying examination in separate categories for open seats is maintained by the concerned Convener (Admissoin).
    - The applicants are allotted to the college by the Convenor, EAMCET every year. The Management seats are filled as per the guidelines of Andhra Pradesh State Council of Higher Education at college level.

XIV. RESULTS OF ADMISSION UNDER MANAGEMENT SEATS/VACANT SEATS

- The admissions under Management Quota are filled as per the guidelines of Andhra Pradesh State Council of Higher Education i.e. 30% for the Academic Year 2010-11.

- The balance seats left vacant of the 70% of the total intake will be filled at institutional spot admissions as per the guidelines of the Convenor, EAMCET every year.

- **Composition of selection team for admission under Management Quota with the brief profiles of members (This information be made available in the public domain after the admission process is over)**

    - As per the guidelines of Convenor, EAMCET the college Principal will act as competent authority to fill the Management/Vacant seats.

- **Score of the individual candidates admitted arranged in order of merit.**

    - The left over seats of 70% Convenor quota, the eligibility criterion is given in the guidelines of the Convenor, EAMCET.

- **Waiting list of the candidates in order of merit to be operative from the last date of joining of the first list candidates.**

NOT APPLICABLE

- **List of the candidates who joined within the date, vacancy position in each category before operation of waiting list.**

NOT APPLICABLE

XV. INFORMATION ON INFRASTRUCTURE AND OTHER RESOURCES AVAILABLE

LIBRARY

S.No	Course(s)	Number of Titles of the books	Number of Volumes of the books	JOURNALS		
				National	International	E-journals
1	B.Tech (ECE)	1530	9207	24	6	IEEE – ASPP (package)
2	B.Tech (EEE)	1533	8582	12	4	
3	B.Tech (CSE)	1644	9236	12	4	
4	B.Tech (Civil)	563	4214	6	4	
5	B.Tech (Mechanical)	115	545	6	4	
6	M.Tech (CSE)	176	1369	6	2	
7	M.Tech (SE)	140	1224	5	2	
8	M.Tech (ES)	133	1299	5	2	
9	M.Tech (VLSI)	184	1369	5	2	
10	M.Tech (EPS)	85	276	5	-	
11	M.Tech (PE)	69	255	5	-	
12	MBA	398	3320	12	2	
13	MCA	523	4614	12	2	

List giving number and details for the major Equipment, Computers, software and printers

1. B.Tech- Electronics and Communication Engineering (ECE):

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Electrical Circuits Lab	1.Multi sim software	01	1,14,400.00
		2.CRO(30&20 MHz)	32	5,72,000.00
		3.Function generator-1MHz	33	2,06,810.00
		4.RPS	02	6,500.00
		5.Bread board trainers	34	1,41,300.00
		6.Digital Multimeter	67	88,200.00
		7.DC Voltmeters	16	10,400.00
		8.DC Ammeter	24	15,600.00
		9.Trainer kits	24	33,250.00
		10.Decade Resistance 11.Inductive Capacitance box	55	1,07,250.00
		Total Cost		12,95,710.00
2	Analog communication lab	1.CRO 30 MHz	10	1,95,000.00
		2.Function Generator	02	6,700.00
		3.Spectrum analyzer[500 MHz]	01	66,300.00

		4.Digital storage oscilloscope 5.TV Circuit display 6.Function generator 7.Analog communication trainer kits	01 01 02 25	19,500.00 24,225.00 6,672.00 42,934.00
		Total Cost		3,61,331.00
3	Pulse & Digital circuits Lab	1.CRO 20MHz 2.Function Generator 3.RPS 4.31/2 digit hand digital multimeter 5.Bread board trainer 6.Digital IC Tester 7.Analog IC Tester	12 12 10 10 13 01 01	1,95,500.00 89,230.00 37,250.00 19,500.00 66,300.00 6,672.00 24,000.00
		Total Cost		4,38,452.00
S.No.	**Name of the Laboratory**	**Major lab equipment/software**	**Nos.**	**Cost of the equipments(Rs.)**
4	Digital Communication Lab	1.CRO 30MHz 2.Function Generator 3.Spectrum analyzer (500 MHz) 4.Digital Storage Oscilloscope 5.TV Circuit Display 6.Function Geneator(2MHz pulse generator with 30 MHz with 30MHz frequency counters) 7.DC Trainer kits	10 02 01 01 01 02 16	1,95,000.00 6,700.00 66,300.00 19,500.00 24,225.00 6,672.00 93,800.00
		Total Cost		4,12,197.00
5	IC Apllications & E-Cad Lab	**1.Desktop : System : Brand – HP (20,500)** Intel core 2 Duo 2.2 GHz rocessor, Intel 946Gz chipset mother board, 1GB DDR2 RAM, 160 GB SATA HDD, 1000 Mbps onboard Ethernet, 15'' LCD monitor, USB optical mouse & normal keyboard.**Stabilizer:** Altek 10KVA Servo Stabilizer(12,000) Altek 15KVA Servo Stabilizer(15,511) **Networking components:** 9u Mount Rack(4,100.00) 24 port 10/1000 MBPS switches(5,700.00) 24 port patch panel(4,000.00) 8 port Giga Byte switch(3,365.00) Fiber optic media converter(12,700.00) 2.Xilinx FPGA Spartan-IIE 3.Xilinx CPLD 4.VLSI Universal kit 5.Xilinx VLSI Design Software	30 01 01 01 03 02 01 01 01 01 03 01	6,15,000.00 12,000.00 15,511.00 4,100.00 17,100.00 8,000.00 3,365.00 12,700.00 18,000.00 14,000.00 62,400.00 60,000.00

		Total Cost		8,42,176.00
6	Microprocessors & Interfacing Lab	1.Intel Dual core system 34(HCL) 2.8051 RTOS development board(Embedded) 3.CRO(20MHz) 4.8085 Trainer kits 5.8086 trainer kits 6.Interfacing kits 7.8051 trainer kits	30 12 02 01 14 19 13	5,25,000.00 99,640.00 29,000.00 4,300.00 85,600.00 28,300.00 93.548.00
		Total Cost		8,65,418.00
S.No.	**Name of the Laboratory**	**Major lab equipment/software**	**Nos.**	**Cost of the equipments(Rs.)**
7	Microwave & optical communication Lab	1.Microwave Test bench(Klystron power gunn) 2.optical fiber trainer kits 3.Laser trainer kit 4.Klystron microwave test benches 5.parabolic antenna 6.CRO(20MHz)	02 02 02 02 01 02	2,73,860.00 } 62,000.00 1,11,200.00 5,625.00 25,000.00
		Total Cost		4,78,185.00
8	Digital signal processing lab	**Desktop : system : brand-lenovo M57e(20,300)** Intel dual core 2.2GHz processor(800MHz FSB, 2MB L2 cache), Intel G31 chipset mother board, 1GB DDR2 RAM, 160 GB SATA HDD, 1000 MBPS Ethernet, Intel graphics, 15'' TFT LCD Monitor, IBM USB optical mouse, keyboard **Stabilizer:** Altek 10KVA Servo Stabilizer(12,000) Altek 15KVA Servo Stabilizer(15,511) **Printers:** Konica page pro 1300w Laser printer (26,500) **Networking components:** 9u mount rack(4,326.00) 24 port 1Gigabit switches(14,903.00) 24 port jack panel (4,519.00) 8 port Giga bit switch(3,365.00) Fiber optic media converter(12,700.00) DSP trainer kits	30 01 01 01 01 03 03 01 01 11	6,09,000.00 12,000.00 15,511.00 26,500.00 4,326.00 44,709.00 13,557.00 3,365.00 12,700.00 2,28,800.00
		Total Cost		9,70,468.00

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
9	Research and Development lab	**1.Desktops : systems :brand-Lenovo M57e(20,300)** Intel Dual Core 2.2 GHz processor(800MHz FSB, 2 MB L2 cache), Intel G31 chipset mother board, 1GB DDR2 RAM, 160 GB SATA HDD, 1000 Mbps Ethernet, Intel graphics, 15'' TFT LCD monitor, IBM USB optical mouse, keyboard **Stabilizer:** Altek 10KVA Servo stabilizer(12,000) Altek 15KVA Servo stabilizer(15,000) **Printers** Konica page pro 1300w laser printer (26,500) **Networking components:** 9u Mount Rack(4,326.00) 24 port 1Giga bit switches(14,903.00) 24 port jack panel (4,519.00) 8 port Gigabit switch(3,365.00) Fiber optic media converter(12,700.00) 2.CRO(20MHz) 3.Function Generator-1MHz 4.Bread board trainer 5.Digital ammeter 6.Decode resistance, inductance box 7.Digital LCR meter	15 01 01 01 01 03 03 01 01 12 12 12 24 24 01	3,04,500.00 12,000.00 15,511.00 26,500.00 4,326.00 44,709.00 13,557.00 3,365.00 12,700.00 1,53,000.00 70,320.00 37,200.00 33,600.00 33,000.00 4,500.00
		Total cost		7,68,788.00

2. B.Tech Electrical and Electronics Engineering (EEE)

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	**FM&HM Lab**	1.impact of jet on vanes 2.single stage centrifugal pump 3.multi stage centrifugal pump 4.reciprocating pump 5.combined unit of venture& orifice meter 6.pipe friction apparatus 7.flow through pipes,minor losses 8.turbine flow meter 9.pelton wheel		30,000.00 48,000.00 55,000.00 45,000.00 35,000.00 35,000.00 35,000.00 25,000.00 1,45,000.00
		Total Cost		4,53,000.00
2	Electrical circuits & Simulation lab	1.Function Generator 2.DC regulated power supply 3.Superposition theorem trainer 4.Reciprocity theorem trainer 5.Series parallel resource trainer 6.Clippers & clampers trainer 7.Current locus trainer 8.Low pass high trainer 9.Thevinnis & Nortans theorem trainer 10.CRO 11.Bread board trainers 12.Auto transformers 13.Pspice Software	07 02 01 01 01 01 01 01 01 03 08 03	42,195.00 7,935.00 1,180.00 1,080.00 1,380.00 1,180.00 1,380.00 2,780.00 1,280.00 48,000.00 24,000.00 47,610.00 2,05,920.00
		Total Cost		3,85,920.00
3	IC & PDC Lab	1.Cathode Ray oscilloscope(20MHz) 2.Function generator 3.Regulated power supply 4.3½ Digit hand held digital multimeter 5.Bread board connector 6.Digital IC tester 7.Analog IC tester	01 12 12 10 13 01 01	1,95,500.00 89,230.00 37,250.00 19,500.00 66,300.00 6,672.00 24,000.00
		Total Cost		4,38,452.00
S.No.	**Name of the Laboratory**	**Major lab equipment/software**	**Nos.**	**Cost of the equipments(Rs.)**
4	Electrical Machines lab	1.Rectifier(220v) 2. Rectifier(30v) 3.DC shunt NG set	 01 01	 1,45,000.00 38,000.00

		4.DC shunt meter compound genset 5.DC shunt motors 6.DC compound motor 7.DC compound motor & series genset 8.DC series motor & series genset 9.Electrical machine tutor 10.Synchronous motor 11.3-ϕ Induction motor-squirrel cage 12. 3-ϕ Induction motor-slip ring 13.Alternate set(salient pole) 14. Alternate set(non salient pole) 15. 3-ϕ transformer 16.Coding rheostats 17. 3-ϕ transformer 18.Induction generator set 19.Repulsion motor 20.Universal motor	02 01 03 01 01 01 01 01 01 01 02 04 03 01 01 01 01 	1,59,000.00 29,500.00 1,20,000.00 40,000.00 79,500.00 79,500.00 87,000.00 32,000.00 17,500.00 17,500.00 79,500.00 1,59,000.00 76,440.00 58,200.00 23,550.00 78,000.00 15,450.00 16,350.00
		Total Cost		13,50,990.00
5	Control systems & simulation lab	1.PLC 2.DC speed control unit 3.PID controller trainer 4.SP torque characteristics of AC series motor 5.Synchronous transformer receiver pair 6.Magnetic amplifier trainer 7.load lay network unit 8.PID controller trainer 9.CRO 10.Matlab software	01 01 01 01 01 01 01 01 01 01	17,400.00 17,050.00 18,150.00 16,500.00 14,300.00 13,750.00 13,750.00 32,500.00 16,000.00 4,60,200.00
		Total Cost		6,19,600.00

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
6	Power Electronics & simulation lab	1.IGBT based 3-ϕ inverter 2. 3-ϕ bridge rectifier 3.Converter modules SCR 4.Converter modules with snubber 5.Universal motor speed control by fully controlled converter 6.CRO 7.Oscillioscope demonstrator 8. 1-ϕ cyclo converter with R&RL loads 9.DC jones chopper	01 01 06 04 01 17 01 01 01	79,560.00 64,980.00 57,000.00 57,000.00 29,000.00 2,39,000.00 22,000.00 23,695.00 20,475.00

		Total Cost		5,93,210.00
7	Micro processor & micro controller lab	1.IBM Lenovo M57 systems 2.8051 RTOS development board 3.CRO(20MHz) 4.8085 trainer kits 5.8086 trainer kits 6.Interfacing kits 7.8051 trainer kits	30 12 02 01 14 19 13	6,09,000.00 99,640.00 29,000.00 4,300.00 85,600.00 28,330.00 93,548.00
		Total Cost		5,93,210.00
8	Electrical Measurements lab	1.Digital CCR metwer-925 2.Digital meggar(insulation) 3. 1-ϕ Inductive load 4. 1-ϕ Auto T/F 5.LVDT & capacitance pick up trainer 6.Silsbee's method trainer 7.Resistance strain gauge	01 01 02 02 01 01 01	10,740.00 10,000.00 36,660.00 23,400.00 20,250.00 51,500.00 10,500.00
		Total Cost		1,63,050.00
9	Research and development lab	1.Desktops : systems : brand-Lenovo M57e(20,300) Intel dual core 2.2GHz processor(800MHz FSB, 2 MB L2 cache), Intl G31 chipset mother board,1 GB DDR2 RAM, 160 GB SATA HDD, 1000 Mbps Ethernet, Intel graphics, 15'' TFT LCD monitor, IBM USB optical mouse, keyboard **Stabilizer:** Altek 10KVA servo stabilizer (12,000) Altek 15KVA servo stabilizer(15,511) **Printers:** Konica page pro 1300w laser printer(26,500) **Networking components:** 9u mount rack (4,519.00) 24 port 1Gigabit switches (14,903.00) 24 port jack panel(4,519.00) 8 port Gigabit switch(3,365.00) Fiber optic media converter(12,700.00) 2.MATLAB software 3.SPICE software	15 01 01 01 01 03 03 01 01 01 01	3,04,500.00 12,000.00 15,511.00 26,500.00 4,326.00 44,709.00 13,557.00 3,365.00 12,700.00 4,60,200.00 2,05,920.00
		Total Cost		11,03,288.00
10	Simulation lab	Systems IBM Lenovo M57 Printers MATLAB software PSPICE software	30 06 01 01	6,09,000.00 18,300.00 4,60,200.00 2,05,920.00
		Total Cost		12,93,420.00

3. B.Tech-Computer Science Engineering (CSE)

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Computer lab-II (CSE)	**Desktops : systems : brand-Wipro** Pentium D 2.66 GHz 533 FSB EM64T, INTEL 845GV Chipset, 256 MB DDR RAM, 80GB SATA HDD, 100 Mbps Ethernet, WIPRO 15'' COLOR Monitor, 52x CDROM, USB optical mouse & multimedia keyboard.**(20,000)** **Stabilizer:** Altek 10KVA servo stabilizer**(12,000)** Powertek 20KVA servo stabilizer**(30,600)** **Printers:** TVS MSP 250 XL Classic Dot Matrix printers**(8,300)** **Networking components:** 24 port D-link 10/100 MB switches**(7,150.00)** 24 port patch panel(4,100.00)	60 01 01 06 03 03	12,00,000.00 12,000.00 30,600.00 49,800.00 21,450.00 12,300.00
		Total Cost		13,26,150.00
2	Computer Lab-III (CSE)	**1.Desktops : systems : brand-Lenovo M57e(20,300)** Intel dual core 2.2GHz processor(800MHz FSB, 2 MB L2 cache), Intl G31 chipset mother board,1 GB DDR2 RAM, 160 GB SATA HDD, 1000 Mbps Ethernet, Intel graphics, 15'' TFT LCD monitor, IBM USB optical mouse, keyboard **Stabilizer:** Altek 10KVA servo stabilizer (12,000) Altek 15KVA servo stabilizer(15,511) **Printers:** Konica page pro 1300w laser printer(6,300) **Networking components:** 9u mount rack (4,326.00) 24 port 1Gigabit switches (14,903.00) 24 port jack panel(4,519.00) 8 port Gigabit switch(3,365.00) Fiber optic media converter(12,700.00)	60 01 01 07 01 03 03 01 01	12,18,000.00 12,000.00 15,511.00 44,100.00 4,326.00 44,709.00 13,557.00 3,365.00 12,700.00
		Total Cost		13,68,268.00
3	Computer center	**1.Desktops : systems : brand-Lenovo A55(20,600)**		

		Intel PD 915 3.0 GHz, Intel 946 GHz chipset, 512 MB DDR2, 160 GB SATA HDD, 1000 Mbps Ethernet, Intel graphics, 15'' TFT LCD Monitor, USB optical mouse, normal keyboard **Stabilizer:** Altek 10KVA servo stabilizer (12,000) **Printers:** Konica page pro 1300w laser printer(6,300) **Networking components:** 9u mount rack (4,326.00) 24 port 1Gigabit switches (14,903.00) 24 port jack panel(4,519.00) 8 port Gigabit switch(3,365.00)	120 03 10 01 03 03 01	24,72,000.00 36,000.00 63,000.00 4,326.00 44,709.00 13,557.00 3,365.00
			Total cost	26,36,957.00

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
4	Computer Lab-IV (CSE)	**Desktops : systems : brand-Wipro** Pentium D 2.66 GHz 533 FSB EM64T, INTEL 845GV Chipset, 256 MB DDR RAM, 80GB SATA HDD, 100 Mbps Ethernet, WIPRO 15'' COLOR Monitor, 52x CDROM, USB optical mouse & multimedia keyboard.**(20,000)** **Stabilizer:** Altek 10KVA servo stabilizer**(12,000)** Powertek 20KVA servo stabilizer**(30,600)** **Printers:** TVS MSP 250 XL Classic Dot Matrix printers**(8,300)** **Networking components:** 24 port D-link 10/100 MB switches**(7,150.00)** 24 port patch panel(4,100.00)	60 01 01 05 03 03	12,00,000.00 12,000.00 30,600.00 41,500.00 21,450.00 12,400.00
			Total Cost	13,17,850.00

5. B.Tech – CIVIL Engineering

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Surveying Lab-I	Land Measuring Chain		
		a) 30 meters long made of GI with 10 arrows		11,500.00
		b) Same as above 20 meters long	10	1,900.00
		c) Gunter Chain 66 feet having 10 links	2	950.00
		d) Revenue Chain 33 Feet		1,600.00
		Prism Compass – 100 mm dia	1	
		Prism Compass – Mixed brass	2	21,000.00
		Survey Compass		
		Cross Staff- Wooden head with M.S.Pole	12	5,000.00
		Cross Staff- Aluminum head with M.S.Pole	2	
		Optical Square Circular Type	10	4,750.00
		Plane tables		
		Ranging Rods	10	65,000.00
		Planimeter	40	7,500.00
		Telescopic Alidade		1,250.00
		Box sextent	1	6,750.00
		Measuring Tape	1	2,500.00
		Steel Arrows	1	3,500.00
		Hammer	10	250.00
		Dumpy Level	10	600.00
		Auto Level	4	65,000.00
		Aluminum Leveling Staff	10	46,000.00
		Electronic Total Station 632 L	15	16,750.00
			Total Cost	2,61,800.00

2	Strength of Materials lab	Universal Testing Machine UT N60	1	5,13,000.00
		Double shear attachment	1	28,000.00
		Mechanical Extensometer Model EM1	1	31,000.00
		Torsion Testing Machine	1	1,33,000.00
		Rockwell cum Brinell Hardness Tester	1	48,000.00
		Impact Testing Machine	1	96,100.00
		Self Centering Tong	1	2,400.00

		Charpy/ Izod caliper guage Specimen Clamps for round Izod specimens Template for checking 10x10 mm for Izod square U Notch guage V Notch guage U Notch milling cutter V Notch milling cutter Hand operated Spring Testing Machine Digital Compression Testing Machine	1 1 1 1 1 1 1 1	4,200.00 2,700.00 1,200.00 450.00 450.00 3,200.00 4,800.00 72,000.00 2,83,500.00
		Total Cost		12,24,000.00
3	Surveying Lab-II	Transisit Vernier Theodolite Trimble M3 Total Station	10 1 set	1,60,000.00 3,35,000.00
		Total cost		4,95,000.00
4	CAD LAB	Stad Pro Software Mix Rods Microstations and Desktops Stabilizer, Networking	5 3 2 60	1700000
		Total cost		1700000
5	HIGHWAY MATERIALS & CONCRETE TECHNOLOGY LAB	Los angles abrasion Test m/c, Bitumen Ductility setup, Apparatus for aggregate crushing test, Aggregate Impact testing machine	1 1 1 1	420911
				420911
6	GEO ENGINEERING LAB	Casagrend liquid limt apparatus, Permeability of soil, Apparatus for CBR test, Box shear test apparatus		623424
				623424
7	ENVIRONMENTAL ENGINEERING LAB	Digital PH meter, BOD Incubator, Digital Conductivity meter, Digital COD Digester, Nephelometer, JAR		212285
				212285

8	ENGINEERING GEOLOGY LAB	Mineral Specimens, Rock Specimens, Structural Geology Models, Cleavage Collection, Luster Collection		77862
				77862
9	CONCRETE TECHNOLOGY LAB	Concrete Vibrating Table, Vee-Bee consistometer test apparatus, Cube models, Compaction factor test		265324
				265324

6. Humanities & Sciences (H&S):

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Engineering Physics lab	1.Battery eliminators 2.Torsional pendulum set 3.'Na' vapour lamp set 4.'Hg'vapour lamp set 5.Stewart of Gee's set 6.Lasre diode with grating 7.Melde's apparatus set 8.Optical fiiber kit 9.B-H curve kit 10.Newton's rings set up 11.spectrometer with prism 12.Travelling microscopes 13.air wedge set up 14.energy band gap	3 2 2 3 2 2 1 1 1 3 2 5 3 1	2,940.00 5,100.00 11,520.00 3,960.00 7,160.00 8,700.00 3,000.00 3,250.00 3,750.00 825.00 16,900.00 36,100.00 725.00 2,500.00
		Total Cost		1,06,430.00
2	Engineering chemistry lab	**Glass wire** Burette,pipette,conical flask, standard flask,measuring jars, test tubes, iodine flask. **Instruements** Digital balance Analytical balance Conduct meter Viscometer-I Viscometer-II Vacume pump Distilled water plant P^H meter, rubber gas tube Colorimeter, water bath, Bunsen burner **Chemicals** EDTA, EBT, $CaSo_4$, $CaCo_3$, fast sulphur black, hypo KI,NaN_3,$K_2Co_2O_3$,STARCH,$FeCl_2$		50,000.00 1,50,000.00 50,000.00

		Total Cost		2,50,000.00
3	Engineering Workshop	1.lathe machine 2.drilling machine 3.bench grinder 4.welding transformer 5.carpentry's vice 6.fitting bench vice 7.surfce plate 8.angle plate 9.hack saw frames 10.12'' rough flat files 11.18'' hand saws 12.12'' tenon saws 13.wooden rough files 14.6'' steel rules 15.12'' steel rules 16.try square 17.M.S.Flats & wooden pieces	1 2 3 1 6 8 1 1 10 6 6 6 6 3 6 18 500	65,000.00 7,000.00 4,500.00 1,800.00 3,375.00 7,340.00 1,285.00 815.00 750.00 660.00 270.00 180.00 300.00 72.00 144.00 432.00 9000.00
		Total Cost		1,02,923.00
4	Computer lab-IV	**1.Desktops : systems : brand-Acer (19,078)** Intel P-IV 2.26 GHz, Intel 915 chipset mother board, 256 MB DDR RAM, 80 GB SATA HDD, 100 Mbps Ethernet, Acer 15'' color monitor, optical mouse, keyboard, floppy drive. **Stabilizer:** Altek 10KVA servo stabilizer (12,000) **Printers:**(6,100) **Networking components:** 24 port D-Link 10/100 MB switches(4,200.00)	60 02 07 02	11,44,680.00 12,000.00 42,700.00 4,200.00
		Total cost		12,03,580.00
5	English communication lab	Desktops:HP Stabilizer Networking components English language and communication skills software K-van solutions Pvt.Ltd.,	30	6,15,000.00 12,000.00 14,250.00 67,600.00
		Total cost		7,08,850.00

7. Master of Computer Applications (MCA):

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Computer lab-VI	**1.Desktops : systems : brand-Lenovo A55(20,600)** Intel PD 915 3.0 GHz, Intel 946 GHz chipset, 512 MB DDR2, 160 GB SATA HDD, 1000 Mbps	60	12,36,000.00

		Ethernet, Intel graphics, 15'' TFT LCD Monitor, USB optical mouse, normal keyboard **Stabilizer:** Altek 10KVA servo stabilizer (12,000) **Printers:** Konica page pro 1300w laser printer(8,300) **Networking components:** 9u mount rack (4,326.00) 24 port 1Gigabit switches (14,903.00) 24 port jack panel(4,519.00) 8 port Gigabit switch(3,365.00)	 03 07 01 03 03 01	 36,000.00 58,100.00 4,326.00 44,709.00 13,557.00 3,365.00
		Total Cost		13,96,057.00
2	Computer lab-VII	**1.Desktops : systems : brand-Lenovo M57e(20,300)** Intel dual core 2.2GHz processor(800MHz FSB, 2 MB L2 cache), Intl G31 chipset mother board,1 GB DDR2 RAM, 160 GB SATA HDD, 1000 Mbps Ethernet, Intel graphics, 15'' TFT LCD monitor, IBM USB optical mouse, keyboard **Stabilizer:** Altek 10KVA servo stabilizer (12,000) Altek 15KVA servo stabilizer(15,511) **Printers:** Konica page pro 1300w laser printer(26,500) **Networking components:** 9u mount rack (4,326.00) 24 port 1Gigabit switches (14,903.00) 24 port jack panel(4,519.00) 8 port Gigabit switch(3,365.00) Fiber optic media converter(12,700.00)	60 01 01 01 01 03 03 01 01	12,18,000.00 12,000.00 15,511.00 26,500.00 4,326.00 44,709.00 13,557.00 3,365.00 12,700.00
		Total Cost		13,50,668.00

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
3	English communication lab	Desktops:HP Stabilizer Networking components English language and communication skills software K-van solutions Pvt.Ltd.,	30	6,15,000.00 12,000.00 14,250.00 67,600.00
			Total Cost	13,50,668.00

8. M.Tech Computer Science (Computer Science & Engineering):

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Software lab-I	Desktops Stabilizer Networking components Printers(6,100)	30 02	6,15,000.00 12,000.00 14,250.00 12,200.00
		Total Cost		6,53,450.00
2	Software lab-II	Desktops Stabilizer Networking components Printers(6,100)	30 02	6,15,000.00 12,000.00 14,250.00 12,200.00
		Total Cost		6,53,450.00

9. M.Tech Software Engineering(Software Engineering):

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Software lab-I	Desktops Stabilizer Networking components Printers(6,100)	30 02	6,15,000.00 12,000.00 14,250.00 12,200.00
		Total Cost		6,53,450.00
1	Software lab-II	Desktops Stabilizer Networking components Printers(6,100)	30 02	6,15,000.00 12,000.00 14,250.00 12,200.00
		Total Cost		6,53,450.00

10.M.Tech Very Very Large Scale Integration (VLSI):

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Digital IC Design Lab	1.Intel core duo systems HP 2.VLSI Universal kits 3.FPGA spar ton II E 4.Xilinx CPLD 5.Xilinx Design VLSI Software	30 03 01 01 01	6,15,000.00 62,400.00 18,000.00 14,000.00 60,000.00
		Total Cost		7,69,400.00
2	Mixed signal lab	**1.Cadence Design Software** **2.Desktop : System : Brand – HP (20,500)** Intel core 2 Duo 2.2 GHz rocessor, Intel 946Gz chipset mother board, 1GB DDR2 RAM, 160 GB SATA HDD, 1000 Mbps onboard Ethernet, 15'' LCD monitor, USB optical mouse & normal keyboard. **Stabilizer:** Altek 10KVA Servo Stabilizer(12,000) Altek 15KVA Servo Stabilizer(15,511) **Networking components:** 9u Mount Rack(4,100.00) 24 port 10/1000 MBPS switches(5,700.00) 24 port patch panel(4,000.00) 8 port Giga Byte switch(3,365.00) Fiber optic media converter(12,700.00) 3.Xilinx FPGA Spartan-IIE 4.Xilinx CPLD 5.VLSI Universal kit 6.Xilinx VLSI Design Software	01 30 01 01 01 03 02 01 01 01 01 03 01	4,92,648.00 6,15,000.00 12,000.00 15,511.00 4,100.00 17,100.00 8,000.00 3,365.00 12,700.00 18,000.00 14,000.00 62,400.00 60,000.00
		Total Cost		13,34,824.00

11. M.Tech Embedded Systems(Embedded Systems):

S.No.	Name of the Laboratory	Major lab equipment/software	Nos.	Cost of the equipments(Rs.)
1	Micro controller & Interfacing Lab	1.Intel Dual core system 34(HCL)	30	5,25,000.00
		2.8051 RTOS development board(Embedded)		
		3.CRO(20MHz)	12	99,640.00
		4.8085 Trainer kits	02	29,000.00
		5.8086 trainer kits	01	4,300.00
		6.Interfacing kits	14	85,600.00
		7.8051 trainer kits	19	28,300.00
			13	93.548.00
		Total Cost		8,65,418.00
2	RTOS & FPGA Lab	**1.Desktop : System : Brand – HP (20,500)**	30	6,15,000.00
		Intel core 2 Duo 2.2 GHz rocessor, Intel 946Gz chipset mother board, 1GB DDR2 RAM, 160 GB SATA HDD, 1000 Mbps onboard Ethernet, 15'' LCD monitor, USB optical mouse & normal keyboard.		
		Stabilizer:		
		Altek 10KVA Servo Stabilizer(12,000)	01	12,000.00
		Altek 15KVA Servo Stabilizer(15,511)	01	15,511.00
		Networking components:		
		9u Mount Rack(4,100.00)	01	4,100.00
		24 port 10/1000 MBPS switches(5,700.00)	03	17,100.00
		24 port patch panel(4,000.00)	02	8,000.00
		8 port Giga Byte switch(3,365.00)	01	3,365.00
		Fiber optic media converter(12,700.00)	01	12,700.00
		2.Xilinx FPGA Spartan-IIE	01	18,000.00
		3.Xilinx CPLD	01	14,000.00
		4.VLSI Universal kit	03	62,400.00
		5.Xilinx VLSI Design Software	01	60,000.00
		Total Cost		8,42,176.00

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Gudur, Nellore Dist - 524101, A.P (India)

2

Course Structure for B.Tech (Electrical and Electronics Engineering) Regular Programme Applicable for students admitted from Academic Year 2013-14

B.Tech I Year – Electrical and Electronics Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS101	Communicative English	2	-	-	-	30	70	100	3
2	13HS102	Engineering Physics	2	-	-	-	30	70	100	3
3	13HS103	Engineering Chemistry	2	-	-	-	30	70	100	3
4	13HS104	Engineering Mathematics-I	3	1	-	-	30	70	100	5
5	13HS105	Engineering Mathematics-II	3	1	-	-	30	70	100	5
6	13HS106	Environmental Science	2	-	-	-	30	70	100	3
7	13HS107	Computer Programming	3	1	-	-	30	70	100	4
8	13HS109	Engineering Drawing	2	-	4	-	30	70	100	4
9	13HS110	Computer Programming Lab	-	-	-	3	30	70	100	4
10	13HS111	Engineering Workshop and IT Workshop	-	-	-	3	30	70	100	4
11	13HS112	Engineering Physics and Engineering Chemistry Lab	-	-	-	3	30	70	100	4
12	13HS113	English Language and Communication Skills Lab	-	-	-	3	30	70	100	4
		Contact Periods / Week	**19**	**3**	**4**	**12**	**360**	**840**	**1200**	
		Total Periods / Week	**38**				**Total Credits**			**46**

Note: Th: Theory, Tu: Tutorial, Drg: Drawing, Lab: Laboratory, IM: Internal Marks, EM: External Marks

- The students attend the Engineering Workshop and IT Workshop in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

- The students attend the Engineering Physics Lab and Engineering Chemistry Lab in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

B.Tech II Year I Semester – Electrical and Electronics Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS114	Engineering Mathematics-III	3	1	-	30	70	100	3
2	13HS120	Professional Ethics and Human Values	2	-	-	30	70	100	2
3	13EE301	Fluid Mechanics and Hydraulic Machinery	3	-	-	30	70	100	3
4	13EE302	Electronic Devices and Circuits	3	1	-	30	70	100	3
5	13EE303	Circuit Theory-I	3	1	-	30	70	100	3
6	13EE304	DC Machines	3	1	-	30	70	100	3
7	13EE305	Data Structures through C	3	-	-	30	70	100	3
8	13EE306	Fluid Mechanics and Hydraulic Machinery Lab	-	-	3	30	70	100	2
9	13EE307	Electronic Devices and Circuits Lab	-	-	3	30	70	100	2
10	13EE308	Electrical Workshop	-	-	3	30	70	100	2
		Contact Periods / Week	**20**	**4**	**9**	**300**	**700**	**1000**	
		Total Periods / Week	**33**			**Total Credits**			**26**

B.Tech II Year II Semester – Electrical and Electronics Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13EE401	Electromagnetic Field Theory	3	1	-	30	70	100	3
2	13EE402	Transformers and Induction Motors	3	1	-	30	70	100	3
3	13EE403	Circuit Theory-II	3	1	-	30	70	100	3
4	13EE404	Generation of Electric Power	3	-	-	30	70	100	3
5	13EE405	Analog Electronic Circuits	3	-	-	30	70	100	3
6	13EE406	Digital Electronics	3	-	-	30	70	100	3
7	13EE407	Electrical Machines Lab-I	-	-	3	30	70	100	2
8	13EE408	Electrical Circuits and Simulation Lab	-	-	3	30	70	100	2
9	13EE409	Pulse and Digital Circuits Lab	-	-	3	30	70	100	2
10	13EE410	Technical Seminar-I	-	1	-	100	-	100	2
		Contact Periods / Week	**18**	**4**	**9**	**370**	**630**	**1000**	
		Total Periods / Week	**31**			**Total Credits**			**26**

B.Tech III Year I Semester – Electrical and Electronics Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS118	Managerial Economics and Financial Analysis	3	-	-	30	70	100	3
2	13HS121	Qualitative and Quantitative Analysis	2	-	-	30	70	100	2
3	13EE501	Electrical Measurements and Instrumentation	3	1	-	30	70	100	3
4	13EE502	Power Electronics	3	-	-	30	70	100	3
5	13EE503	Synchronous & Special Machines	3	-	-	30	70	100	3
6	13EE504	Transmission of Electric Power	3	1	-	30	70	100	3
7	13EE505	Signals and Systems	3	1	-	30	70	100	3
8	13EE506	Electrical Measurements Lab	-	-	3	30	70	100	2
9	13EE507	Electrical Machines Lab-II	-	-	3	30	70	100	2
10	13HS122	Soft Skills Lab	-	-	3	30	70	100	2
		Contact Periods / Week	**20**	**3**	**9**	**300**	**700**	**1000**	
		Total Periods / Week	**32**			**Total Credits**			**26**

B.Tech III Year II Semester – Electrical and Electronics Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13EE601	Microprocessors and Microcontrollers	3	-	-	30	70	100	3
2	13EE602	Power Semiconductor Drives	3	1	-	30	70	100	3
3	13EE603	Power System Operation and Control	3	1	-	30	70	100	3
4	13EE604	Power System Analysis	3	1	-	30	70	100	3
5	13EE605	Control Systems	3	-	-	30	70	100	3
6	13EE606	Linear and Digital IC Applications	3	-	-	30	70	100	3
7	13EE607	Power Electronics and Simulation Lab	-	-	3	30	70	100	2
8	13EE608	Control Systems and Simulation Lab	-	-	3	30	70	100	2
9	13EE609	Microprocessors and Microcontrollers Lab	-	-	3	30	70	100	2
10	13EE610	Technical Seminar-II	-	1	-	100	-	100	2
		Contact Periods / Week	**18**	**4**	**9**	**370**	**630**	**1000**	
		Total Periods / Week	**31**			**Total Credits**			**26**

B.Tech IV Year I Semester – Electrical and Electronics Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS119	Management Science	3	-	-	30	70	100	3
2	13EE701	Electrical Distribution Systems	3	1	-	30	70	100	3
3	13EE702	Switch Gear and Protection	3	1	-	30	70	100	3
4	13EE703	Digital Signal Processing	3	-	-	30	70	100	3
5	13EE704 13EE705 13EE706 13EE707	**Elective-I** 1.Renewable Energy Sources 2.Power System Reliability 3.Embedded Systems 4.High Voltage Engineering	3	-	-	30	70	100	3
6	13EE708 13EE709 13EE710	**Open Elective** 1.Fuzzy logic and Neural Networks 2.Entreprenuership Development 3.Optimization Techniques	3	-	-	30	70	100	3
7	13EE711	Advanced Power Electronics and Drives Lab	-	-	3	30	70	100	2
8	13EE712	Digital Signal Processing Lab	-	-	3	30	70	100	2
9	13EE713	Power System Simulation Lab	-	-	3	30	70	100	2
10	13EE714	Project Work - Phase-I	-	-	2	100	-	100	2
		Contact Periods / Week	**18**	**3**	**11**	**370**	**630**	**1000**	
		Total Periods / Week	**32**			**Total Credits**			**26**

B.Tech IV Year II Semester – Electrical and Electronics Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13EE801	Utilization of Electrical Energy	3	-	-	30	70	100	3
2	13EE802	HVDC and FACTS	3	-	-	30	70	100	3
3	13EE803 13EE804 13EE805 13EE806	**Elective-II** 1. PLCs and Applications 2.Modern Control Theory 3.Smart Grid Systems 4.Database Management Systems	3	1	-	30	70	100	3
4	13EE807 13EE808 13EE809 13EE810	**Elective-III** 1.Energy Auditing and Demand Side Management 2.VLSI Design 3.Computer Organization 4.Design of Electrical Systems	3	1	-	30	70	100	3
5	13EE811	Comprehensive Viva-Voce	-	-	-	-	100	100	2
6	13EE812	Project Work - Phase-II	-	-	-	50	150	200	10
		Contact Periods / Week	**12**	**2**	**-**	**170**	**530**	**700**	
		Total Periods / Week	**14**			**Total Credits**			**24**

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Gudur, Nellore Dist - 524101, A.P (India)

Course Structure for B.Tech (Electronics and Communication Engineering) Regular Programme Applicable for students admitted from Academic Year 2013-14

B.Tech I Year – Electronics and Communication Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS101	Communicative English	2	-	-	-	30	70	100	3
2	13HS102	Engineering Physics	2	-	-	-	30	70	100	3
3	13HS103	Engineering Chemistry	2	-	-	-	30	70	100	3
4	13HS104	Engineering Mathematics-I	3	1	-	-	30	70	100	5
5	13HS105	Engineering Mathematics-II	3	1	-	-	30	70	100	5
6	13HS106	Environmental Science	2	-	-	-	30	70	100	3
7	13HS107	Computer Programming	3	1	-	-	30	70	100	4
8	13HS109	Engineering Drawing	2	-	4	-	30	70	100	4
9	13HS110	Computer Programming Lab	-	-	-	3	30	70	100	4
10	13HS111	Engineering Workshop and IT Workshop	-	-	-	3	30	70	100	4
11	13HS112	Engineering Physics and Engineering Chemistry Lab	-	-	-	3	30	70	100	4
12	13HS113	English Language and Communication Skills Lab	-	-	-	3	30	70	100	4
		Contact Periods / Week	**19**	**3**	**4**	**12**	**360**	**840**	**1200**	
		Total Periods / Week	**38**				**Total Credits**			**46**

Note: Th: Theory, Tu: Tutorial, Drg: Drawing, Lab: Laboratory, IM: Internal Marks, EM: External Marks

- The students attend the Engineering Workshop and IT Workshop in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

- The students attend the Engineering Physics Lab and Engineering Chemistry Lab in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

B.Tech II Year I Semester – Electronics and Communication Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS114	Engineering Mathematics-III	3	-	-	30	70	100	3
2	13HS120	Professional Ethics and Human Values	2	-	-	30	70	100	2
3	13EC301	Network Theory	3	1	-	30	70	100	3
4	13EC302	Electronic Devices and Circuits	3	1		30	70	100	3
5	13EC303	Probability Theory and Stochastic Process	3	-	-	30	70	100	3
6	13EC304	Signals and Systems	3	1		30	70	100	3
7	13EC305	Data Structures through C	3	-	-	30	70	100	3
8	13EC306	Data Structures Lab	-	-	3	30	70	100	2
9	13EC307	Electronic Devices and Circuits Lab	-	-	3	30	70	100	2
10	13EC308	Signals and Systems Lab	-	-	3	30	70	100	2
		Contact Periods / Week	**20**	**3**	**9**	**300**	**700**	**1000**	
		Total Periods / Week	**32**			**Total Credits**			**26**

B.Tech II Year II Semester – Electronics and Communication Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS118	Managerial Economics and Financial Analysis	3	-	-	30	70	100	3
2	13EC401	Electrical Technology	3	-	-	30	70	100	3
3	13EC402	Electromagnetic Theory and Transmission Lines	3	1	-	30	70	100	3
4	13EC403	Switching Theory and Logic Design	3	-	-	30	70	100	3
5	13EC404	Analog Circuit Analysis	3	1	-	30	70	100	3
6	13EC405	Pulse and Digital Circuits	3	1	-	30	70	100	3
7	13EC406	Electrical Engineering Lab	-	-	3	30	70	100	2
8	13EC407	Analog Circuit Analysis Lab	-	-	3	30	70	100	2
9	13EC408	Circuit Simulation Lab	-	-	3	30	70	100	2
10	13EC409	Technical Seminar-I	-	1	-	100	-	100	2
		Contact Periods / Week	**18**	**4**	**9**	**370**	**630**	**1000**	
		Total Periods / Week	**31**			**Total Credits**			**26**

B.Tech III Year I Semester – Electronics and Communication Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS121	Qualitative and Quantitative Analysis	2	-	-	30	70	100	2
2	13EC501	Analog Communications	3	1	-	30	70	100	3
3	13EC502	Linear Integrated Circuits and Applications	3	-	-	30	70	100	3
4	13EC503	Computer Architecture and Organization	3	-	-	30	70	100	3
5	13EC504	Digital IC System Design	3	1	-	30	70	100	3
6	13EC505	Linear Control Systems	3	-	-	30	70	100	3
7	13EC506	Antenna and Wave Propagation	3	1	-	30	70	100	3
8	13EC507	Analog Communications Lab	-	-	3	30	70	100	2
9	13EC508	Linear IC and PDC Lab	-	-	3	30	70	100	2
10	13EC509	Digital IC System Design Lab	-	-	3	30	70	100	2
Contact Periods / Week			**20**	**3**	**9**	**300**	**700**	**1000**	
Total Periods / Week			**32**			**Total Credits**			**26**

B.Tech III Year II Semester – Electronics and Communication Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13EC601	Microprocessors and Microcontrollers	3	1	-	30	70	100	3
2	13EC602	Digital Communications	3	1	-	30	70	100	3
3	13EC603	Digital Signal Processing	3	-	-	30	70	100	3
4	13EC604	VLSI Design	3	1	-	30	70	100	3
5	13EC605	Computer Communication and Networking	3	-	-	30	70	100	3
6	13EC606	Electronic Measurements and Instrumentation	3	-	-	30	70	100	3
7	13EC607	Microprocessors and Microcontrollers Lab	-	-	3	30	70	100	2
8	13EC608	Electronic Measurements and Instrumentation Lab	-	-	3	30	70	100	2
9	13HS122	Soft Skills Lab	-	-	3	30	70	100	2
10	13EC609	Technical Seminar-II	-	1	-	100	-	100	2
		Contact Periods / Week	**18**	**4**	**9**	**370**	**630**	**1000**	
		Total Periods / Week	**31**			**Total Credits**			**26**

B.Tech IV Year I Semester – Electronics and Communication Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13EC701	Optical Communications	3	-	-	30	70	100	3
2	13EC702	Microwave Engineering	3	1	-	30	70	100	3
3	13EC703	DSP Processors and Architectures	3	1	-	30	70	100	3
4	13EC704	Embedded Systems Design	3	1	-	30	70	100	3
5	13EC705 13EC706 13EC707 13EC708	**Elective-I** 1. Operating Systems 2. Wireless Communications and Networks 3. ASIC Design 4. Spread Spectrum Communications	3	-	-	30	70	100	3
6	13EC709 13EC710 13EC711	**Open Elective** 1. Neural Networks and Fuzzy Logic 2. Supervisory Control and Data Acquisition (SCADA) 3.Digital Image Processing	3	-	-	30	70	100	3
7	13EC712	VLSI Circuit Design Lab	-	-	3	30	70	100	2
8	13EC713	Microwave Engineering and Digital Communication Lab	-	-	3	30	70	100	2
9	13EC714	DSP and Embedded processing Lab	-	-	3	30	70	100	2
10	13EC715	Project Work - Phase-I	-	-	2	100	-	100	2
		Contact Periods / Week	**18**	**3**	**11**	**370**	**630**	**1000**	
		Total Periods / Week	**32**			**Total Credits**			**26**

B.Tech IV Year II Semester – Electronics and Communication Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13EC801	Satellite Communication	3	1	-	30	70	100	3
2	13EC802	Radar Systems	3	1	-	30	70	100	3
3	13EC803 13EC804 13EC805 13EC806	**Elective-II** 1.Digital Design through Verilog 2.Microelectromechanical Systems (MEMS) 3.Telecommunication Switching Techniques 4. Data Communication	3	-	-	30	70	100	3
4	13EC807 13EC808 13EC809 13EC810	**Elective-III** 1.RFID Technology 2. Mobile and Cellular Communication 3.Biomedical Instrumentation and Processing 4. Speech Signal Processing	3	-	-	30	70	100	3
5	13EC811	Comprehensive Viva-Voce	-	-	-	-	100	100	2
6	13EC812	Project Work - Phase-II	-	-	-	50	150	200	10
		Contact Periods / Week	**12**	**2**	**-**	**180**	**520**	**700**	
		Total Periods / Week	**14**			**Total Credits**			**24**

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Gudur, Nellore Dist - 524101, A.P (India)

Course Structure for B.Tech (Computer Science and Engineering) Regular Programme Applicable for students admitted from Academic Year 2013-14

B.Tech I Year – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS101	Communicative English	2	-	-	-	30	70	100	3
2	13HS102	Engineering Physics	2	-	-	-	30	70	100	3
3	13HS103	Engineering Chemistry	2	-	-	-	30	70	100	3
4	13HS104	Engineering Mathematics-I	3	1	-	-	30	70	100	5
5	13HS105	Engineering Mathematics-II	3	1	-	-	30	70	100	5
6	13HS106	Environmental Science	2	-	-	-	30	70	100	3
7	13HS107	Computer Programming	3	1	-	-	30	70	100	4
8	13HS109	Engineering Drawing	2	-	4	-	30	70	100	4
9	13HS110	Computer Programming Lab	-	-	-	3	30	70	100	4
10	13HS111	Engineering Workshop and IT Workshop	-	-	-	3	30	70	100	4
11	13HS112	Engineering Physics and Engineering Chemistry Lab	-	-	-	3	30	70	100	4
12	13HS113	English Language and Communication Skills Lab	-	-	-	3	30	70	100	4
		Contact Periods / Week	**19**	**3**	**4**	**12**	**360**	**840**	**1200**	
		Total Periods / Week	**38**				**Total Credits**			**46**

Note: Th: Theory, Tu: Tutorial, Drg: Drawing, Lab: Laboratory, IM: Internal Marks, EM: External Marks

- The students attend the Engineering Workshop and IT Workshop in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

- The students attend the Engineering Physics Lab and Engineering Chemistry Lab in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

B.Tech II Year I Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS115	Probability and Statistics	3	-	-	30	70	100	3
2	13HS120	Professional Ethics and Human Values	2	-	-	30	70	100	2
3	13CS301	Basic Electrical & Electronics Engineering	3	-	-	30	70	100	3
4	13CS302	Electronic Devices and Circuits	3	1	-	30	70	100	3
5	13CS303	Digital Logic Design	3	-	-	30	70	100	3
6	13CS304	Object Oriented Programming through C++	3	1	-	30	70	100	3
7	13CS305	Data Structures	3	1	-	30	70	100	3
8	13CS306	Basic Electrical and Electronics Lab	-	-	3	30	70	100	2
9	13CS307	Data Structures Lab	-	-	3	30	70	100	2
10	13CS308	Object Oriented Programming through C++ Lab	-	-	3	30	70	100	2
		Contact Periods / Week	**20**	**3**	**9**	**300**	**700**	**1000**	
		Total Periods / Week	**32**			**Total Credits**			**26**

B.Tech II Year II Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS118	Managerial Economics and Financial Analysis	3	-	-	30	70	100	3
2	13CS401	Computer Organization	3	-	-	30	70	100	3
3	13CS402	Database Management Systems	3	1	-	30	70	100	3
4	13CS403	JAVA Programming	3	1	-	30	70	100	3
5	13CS404	Mathematical Foundations of Computer Science	3	-	-	30	70	100	3
6	13CS405	Operating Systems	3	1	-	30	70	100	3
7	13CS406	Operating Systems Lab	-	-	3	30	70	100	2
8	13CS407	JAVA Lab	-	-	3	30	70	100	2
9	13CS408	Database Management Systems Lab	-	-	3	30	70	100	2
10	13CS409	Technical Seminar-I	-	1	-	100	-	100	2
		Contact Periods / Week	**18**	**4**	**9**	**370**	**630**	**1000**	
		Total Periods / Week	**31**			**Total Credits**			**26**

B.Tech III Year I Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS121	Qualitative and Quantitative Analysis	2	-	-	30	70	100	2
2	13CS501	Micro Processors and Micro Controllers	3	-	-	30	70	100	3
3	13CS502	Principles of Programming Languages	3	1	-	30	70	100	3
4	13CS503	Computer Networks	3	1	-	30	70	100	3
5	13CS504	Design and Analysis of Algorithms	3	1	-	30	70	100	3
6	13CS505	Formal Languages and Automata Theory	3	-	-	30	70	100	3
7	13CS506	Software Engineering	3	-	-	30	70	100	3
8	13CS507	Microprocessors and Microcontrollers Lab	-	-	3	30	70	100	2
9	13CS508	Computer Networks Lab	-	-	3	30	70	100	2
10	13HS122	Soft Skills Lab	-	-	3	30	70	100	2
		Contact Periods / Week	**20**	**3**	**9**	**300**	**700**	**1000**	
		Total Periods / Week	**32**			**Total Credits**			**26**

B.Tech III Year II Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13CS601	Computer Graphics	3	1	-	30	70	100	3
2	13CS602	Object Oriented Analysis and Design	3	-	-	30	70	100	3
3	13CS603	Network Security and Cryptography	3	-	-	30	70	100	3
4	13CS604	Unix Programming	3	1	-	30	70	100	3
5	13CS605	Web Technologies	3	1	-	30	70	100	3
6	13CS606	Compiler Design	3	-	-	30	70	100	3
7	13CS607	Case Tools Lab	-	-	3	30	70	100	2
8	13CS608	UNIX and Compiler Design Lab	-	-	3	30	70	100	2
9	13CS609	Web Technologies Lab	-	-	3	30	70	100	2
10	13CS610	Technical Seminar-II	-	1	-	100	-	100	2
		Contact Periods / Week	**18**	**4**	**9**	**370**	**630**	**1000**	
		Total Periods / Week	**31**			**Total Credits**			**26**

B.Tech IV Year I Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS119	Management Science	3	-	-	30	70	100	3
2	13CS701	Cloud Computing	3	1	-	30	70	100	3
3	13CS702	Data Warehousing and Data Mining	3	1	-	30	70	100	3
4	13CS703	Software Testing	3	1	-	30	70	100	3
5	13CS704 13CS705 13CS706	**Elective-I** 1.Advanced Computer Architecture 2.Digital Image Processing 3.Distributed Systems	3	-	-	30	70	100	3
6	13CS707 13CS708 13CS709	**Open Elective** 1.Big Data 2.E-Commerce 3.Green Computing	3	-	-	30	70	100	3
7	13CS710	Cloud Computing Lab	-	-	3	30	70	100	2
8	13CS711	Data Warehousing and Data Mining Lab	-	-	3	30	70	100	2
9	13CS712	Testing Tools Lab	-	-	3	30	70	100	2
10	13CS713	Project Work Phase-I	-	-	2	100	-	100	2
		Contact Periods / Week	**18**	**3**	**11**	**370**	**630**	**1000**	
		Total Periods / Week	**32**			**Total Credits**			**26**

B.Tech IV Year II Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13CS801	Software Architecture and Design Patterns	3	1	-	30	70	100	3
2	13CS802	Human Computer Interface	3	1	-	30	70	100	3
3	13CS803 13CS804 13CS805	**Elective-II** 1.Software Project Management 2. Adhoc and Wireless Sensor Networks 3. Mobile Computing	3	-	-	30	70	100	3
4	13CS806 13CS807 13CS808	**Elective-III** 1.Intelligent Agents 2.Secure Software Engineering 3.Web Services	3	-	-	30	70	100	3
5	13CS809	Comprehensive Viva-Voce	-	-	-	-	100	100	2
6	13CS810	Project Work Phase-II	-	-	-	50	150	200	10
		Contact Periods / Week	**12**	**2**	**-**	**170**	**530**	**700**	
		Total Periods / Week	**14**			**Total Credits**			**24**

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Gudur, Nellore Dist - 524101, A.P (India)

Course Structure for B.Tech (Civil Engineering) Regular Programme
Applicable for students admitted from Academic Year 2013-14

B.Tech I Year – Civil Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS101	Communicative English	2	-	-	-	30	70	100	3
2	13HS102	Engineering Physics	2	-	-	-	30	70	100	3
3	13HS103	Engineering Chemistry	2	-	-	-	30	70	100	3
4	13HS104	Engineering Mathematics-I	3	1	-	-	30	70	100	5
5	13HS106	Environmental Science	2	-	-	-	30	70	100	3
6	13HS107	Computer Programming	3	1	-	-	30	70	100	4
7	13HS108	Engineering Mechanics	3	1	-	-	30	70	100	5
8	13HS109	Engineering Drawing	2	-	4	-	30	70	100	4
9	13HS110	Computer Programming Lab	-	-	-	3	30	70	100	4
10	13HS111	Engineering Workshop and IT Workshop	-	-	-	3	30	70	100	4
11	13HS112	Engineering Physics and Engineering Chemistry Lab	-	-	-	3	30	70	100	4
12	13HS113	English Language and Communication Skills Lab	-	-	-	3	30	70	100	4
		Contact Periods / Week	**19**	**3**	**4**	**12**	**360**	**840**	**1200**	
		Total Periods / Week	**38**				**Total Credits**			**46**

Note: Th: Theory, Tu: Tutorial, Drg: Drawing, Lab: Laboratory, IM: Internal Marks, EM: External Marks

- The students attend the Engineering Workshop and IT Workshop in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

- The students attend the Engineering Physics Lab and Engineering Chemistry Lab in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

B.Tech II Year I Semester – Civil Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS116	Mathematics-II	3	-	-	-	30	70	100	3
2	13HS120	Professional Ethics and Human Values	2	-	-	-	30	70	100	2
3	13CE301	Building Materials, Planning and Construction	3	-	-	-	30	70	100	3
4	13CE302	Strength of Materials-I	3	1	-	-	30	70	100	3
5	13CE303	Fluid Mechanics	3	1	-	-	30	70	100	3
6	13CE304	Surveying-I	3	1	-	-	30	70	100	3
7	13CE305	Engineering Geology	3	-	-	-	30	70	100	3
8	13CE306	Strength of Materials Lab	-	-	-	3	30	70	100	2
9	13CE307	Engineering Geology Lab	-	-	-	3	30	70	100	2
10	13CE308	Survey Field Work –I	-	-	-	3	30	70	100	2
		Contact Periods / Week	**20**	**3**	**-**	**9**	**300**	**700**	**1000**	
		Total Periods / Week	**32**				**Total Credits**			**26**

B.Tech II Year II Semester – Civil Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS117	Mathematics-III	3	-	-	-	30	70	100	3
2	13CE401	Elements of Electrical and Mechanical Engineering	3	-	-	-	30	70	100	3
3	13CE402	Strength of Materials-II	3	1	-	-	30	70	100	3
4	13CE403	Hydraulics and Hydraulic Machinery	3	1	-	-	30	70	100	3
5	13CE404	Surveying-II	3	1	-	-	30	70	100	3
6	13CE405	Concrete Technology	3	-	-	-	30	70	100	3
7	13CE406	Fluid Mechanics and Hydraulic Machinery Lab	-	-	-	3	30	70	100	2
8	13CE407	Concrete Technology Lab	-	-	-	3	30	70	100	2
9	13CE408	Survey Field work-II	-	-	-	3	30	70	100	2
10	13CE409	Technical Seminar-I	-	1	-	-	100	-	100	2
		Contact Periods / Week	**18**	**4**	**-**	**9**	**370**	**630**	**1000**	
		Total Periods / Week	**31**				**Total Credits**			**26**

B.Tech III Year I Semester – Civil Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS121	Qualitative and Quantitative Analysis	2	-	-	-	30	70	100	2
2	13CE501	Structural Analysis –I	3	1	-	-	30	70	100	3
3	13CE502	Water Resource Engineering-I	3	-	-	-	30	70	100	3
4	13CE503	Reinforced Concrete Structures-I	3	1	-	-	30	70	100	3
5	13CE504	Design of Steel Structures-I	3	1	-	-	30	70	100	3
6	13CE505	Soil Mechanics	3	-	-	-	30	70	100	3
7	13CE506	Environmental Engineering	3	-	-	-	30	70	100	3
8	13CE507	Geotechnical Engineering Lab	-	-	-	3	30	70	100	2
9	13CE508	Environmental Engineering Lab	-	-	-	3	30	70	100	2
10	13CE509	Building Drawing	-	-	3	-	30	70	100	2
		Contact Periods / Week	**20**	**3**	**3**	**6**	**300**	**700**	**1000**	
		Total Periods / Week	**32**				**Total Credits**			**26**

B.Tech III Year II Semester – Civil Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13CE601	Structural Analysis –II	3	1	-	-	30	70	100	3
2	13CE602	Water Resource Engineering-II	3	-	-	-	30	70	100	3
3	13CE603	Reinforced Concrete Structures-II	3	1	-	-	30	70	100	3
4	13CE604	Design of Steel Structures-II	3	1	-	-	30	70	100	3
5	13CE605	Foundation Engineering	3	-	-	-	30	70	100	3
6	13CE606	Transportation Engineering-I	3	-	-	-	30	70	100	3
7	13CE607	Computer Aided Drafting	-	-	-	3	30	70	100	2
8	13CE608	Highway Engineering Lab	-	-	-	3	30	70	100	2
9	13HS122	Soft Skills Lab	-	-	-	3	30	70	100	2
10	13CE609	Technical Seminar-II	-	1	-	-	100	-	100	2
Contact Periods / Week			**18**	**4**	**-**	**9**	**370**	**630**	**1000**	
Total Periods / Week			**31**				**Total Credits**			**26**

B.Tech IV Year I Semester – Civil Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13CE701	Advanced Structural Engineering	3	1	-	-	30	70	100	3
2	13CE702	Estimation and Quantity Surveying	3	1	-	-	30	70	100	3
3	13CE703	Transportation Engineering-II	3	-	-	-	30	70	100	3
4	13CE704	Prestressed Concrete	3	1	-	-	30	70	100	3
5	13CE705 13CE706 13CE707 13CE708	**Elective-I** 1.Earthquake Engineering 2.Advanced Foundation Engineering 3.Repair and Rehabilitation of Structures 4.Water Resources Systems	3	-	-	-	30	70	100	3
6	13CE709 13CE710 13CE711	**Open Elective** 1. Air Pollution and Control 2.Remote Sensing and GIS 3.Disaster Management and Mitigation	3	-	-	-	30	70	100	3
7	13CE712	Computer Aided Analysis & Design Lab	-	-	-	3	30	70	100	2
8	13CE713	Irrigation Design Practice Lab	-	-	-	3	30	70	100	2
9	13CE714	Field Training and Survey Camp	-	-	-	-	100	-	100	2
10	13CE715	Project Work - Phase-I	-	-	-	2	100	-	100	2
		Contact Periods / Week	**18**	**3**	**-**	**8**	**440**	**560**	**1000**	
		Total Periods / Week	**29**				**Total Credits**			**26**

B.Tech IV Year II Semester – Civil Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13CE801	Fundamentals of Finite Element Methods in Civil Engineering	3	1	-	-	30	70	100	3
2	13HS118	Managerial Economics and Financial Analysis	3	-	-	-	30	70	100	3
3	13CE802 13CE803 13CE804 13CE805	**Elective-II** 1.Bridge Engineering 2.Ground Improvement Techniques 3.Environmental Impact Assessment and Management 4.Hydro Power Engineering	3	1	-	-	30	70	100	3
4	13CE806 13CE807 13CE808 13CE809	**Elective-III** 1.Ground Water Development and Management 2.Construction Project Management 3.Experimental Stress Analysis 4.Pavement Analysis and Design	3	0	-	-	30	70	100	3
5	13CE810	Comprehensive Viva - Voce	-	-	-	-	-	100	100	2
6	13CE811	Project Work – Phase-II	-	-	-	-	50	150	200	10
		Contact Periods / Week	**12**	**2**	**-**	**-**	**180**	**520**	**700**	
		Total Periods / Week	**14**				**Total Credits**			**24**

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Gudur, Nellore Dist - 524101, A.P (India)

Course Structure for B.Tech (Mechanical Engineering) Regular Programme
Applicable for students admitted from Academic Year 2014-15

B.Tech I Year – Mechanical Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS101	Communicative English	2	-	-	-	30	70	100	3
2	13HS102	Engineering Physics	2	-	-	-	30	70	100	3
3	13HS103	Engineering Chemistry	2	-	-	-	30	70	100	3
4	13HS104	Engineering Mathematics-I	3	1	-	-	30	70	100	5
5	13HS106	Environmental Science	2	-	-	-	30	70	100	3
6	13HS107	Computer Programming	3	1	-	-	30	70	100	4
7	13HS108	Engineering Mechanics	3	1	-	-	30	70	100	5
8	13HS109	Engineering Drawing	2	-	4	-	30	70	100	4
9	13HS110	Computer Programming Lab	-	-	-	3	30	70	100	4
10	13HS111	Engineering Workshop and IT Workshop	-	-	-	3	30	70	100	4
11	13HS112	Engineering Physics and Engineering Chemistry Lab	-	-	-	3	30	70	100	4
12	13HS113	English Language and Communication Skills Lab	-	-	-	3	30	70	100	4
		Contact Periods / Week	**19**	**3**	**4**	**12**	**360**	**840**	**1200**	
		Total Periods / Week	**38**				**Total Credits**			**46**

Note: Th: Theory, Tu: Tutorial, Drg: Drawing, Lab: Laboratory, IM: Internal Marks, EM: External Marks

- The students attend the Engineering Workshop and IT Workshop in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

- The students attend the Engineering Physics Lab and Engineering Chemistry Lab in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

Detailed Syllabus

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
	2	**0**	**0**	**[3]**

(13HS101) COMMUNICATIVE ENGLISH

Objectives:
- To improve the language proficiency of the students in English with an emphasis on LSRW skills.
- To equip the students to study academic subjects with greater facility through theoretical and practical components of the syllabus.
- To develop study skills as well as communication skills in formal and informal situations.

1. SYLLABUS :
Listening Skills:
Objectives
1. To enable students to develop their listening skills so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation
2. To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and dialects.

Students should be given practice in listening and identifying the sounds of English language and to mark stress , right intonation in connected speech.

- Listening for general content
- Listening to fill up information
- Intensive listening
- Listening for specific information

2. TEXTBOOKS PRESCRIBED:
In order to improve the proficiency of the student in the acquisition of the four skills mentioned above, the following texts and course content are prescribed and divided into Four Units:

For Detailed study: **ENJOYING EVERYDAY ENGLISH**, Sangam Books (India) Pvt Ltd Hyderabad, 2009
For Non-detailed study: **INSPIRING LIVES**, Maruti Publications, Guntur, 2009

UNIT –I:

Heaven's Gate: Introduction of the Author and Lesson, Paragraphs and Description, Introduction of Leh,… Greeting and Leave Taking and Introducing, Naming Words, Homonyms, Homophones, Homographs, Synonyms and Antonyms.
Mokshagundam Visvesvaraya: Introduction of Visvesvaraya, Childhood, Education, Projects he Undertook, Social Reforming Activities….. Synonyms and Antonyms.

UNIT –II:

Cuddalore Experience: Introduction of the Author and Lesson, Paragraphs and Description, Description of Tsunami, Damage Caused, Immediate Rescue Operations Implemented….. Official Reports, Congratulating, Offering Sympathy and Condolences and Making Complaints, Tenses, Phrasal Verbs.

Mother Teresa: Introduction of Teresa, Childhood, Humanity Work, Honours and Awards…. One Word Substitutes.

UNIT –III:

Odds against us: Introduction of the Author and Lesson, Paragraphs and Description, Differences between Foreign Movies and Indian Movies, Three Factors that Guide a Director….. Information Transfer, Conjunctions and Prepositions, Technical Vocabulary.

Charlie Chaplin: Introduction of Chaplin, His Films, His married Life….. One Word Substitutes

UNIT –IV:

Exercises on:

Remedial Grammar covering Common errors in English, Use of Articles and Prepositions, Active/Passive Voice, Reported speech, Tenses, Degrees of Comparison, conditional Clauses (If/Weather/Unless), One Word Substitutions, Idiomatic Expressions, Synonyms & Antonyms, Words often confused, Question Tags.

Exercises on:

Letter Writing

Report Writing

Reference Books:

1. Meenakshi Raman and Sangita Sharma, Technical Communication , Principle and Practice, OUP, 2009
2. Essential Grammar in Use, (with CD) 3/e, Cambridge University Press, 2009
3. M.Ashraf Rizvi, Resumes and Interviews, Tata – McGraw Hill, 2009
4. Robert J. Dixson , Everyday Dialogues in English, Prentice-Hall of India Ltd., 2006.
5. Farhathullah, Communication Skills for Technical Students, T.M., Orient Blackswan, 2008

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
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(13HS102) ENGINEERING PHYSICS

Objectives: To Impart the awareness among the Engineering Students about the present day technologies in Physics to reach the heights of technical globe with latest technologies in Fiber Optics, Nanotechnology, Super Conductivity and Lasers.

UNIT – I:

Optics, Fiber Optics and Lasers

Interference: Introduction, Interference in thin film by reflection, Newton's rings.

Diffraction: Introduction, Fraunhoffer diffraction due to single slit, Diffraction Grating.

Fiber Optics: Construction of Optical Fiber, Principle of Optical Fiber, Acceptance angle and Acceptance cone, Numerical aperture, Types of Optical Fibers, Fiber optic communication system and its advantages, Attenuation in Optical Fibers, Applications of Optical Fibers.
Lasers: Introduction, Characteristics of Lasers, Spontaneous & Stimulated emission of radiation, Population Inversion, Pumping Methods, Components of Lasers, Ruby Laser, Helium Neon Laser, Semiconductor laser, Applications of Lasers.

UNIT – II:
Crystal Structures, X-Ray Diffraction and Semiconductors
Crystal Structures, X-Ray Diffraction: Introduction, Space Lattice, Basis, Unit Cell, Lattice Parameters, Bravais Lattices, Crystal systems, Expression for Lattice constant, Structure and Packing factor of SC, BCC & FCC crystals, Structure of NaCl and Diamond, Crystal Planes, Crystal directions and Miller Indices , Important features of Miller Indices, Expression for Interplanar spacing in rectangular coordinate systems, X-ray Diffraction by crystal planes, Bragg's law, Laue Method, Powder Method .
Semiconductors: Introduction, Intrinsic semiconductor and carrier concentration, Extrinsic semiconductor and carrier concentration, Law of mass action, Electrical conductivity in semiconductors, Drift and Diffusion, Einstein relation, Hall Effect, Direct and Indirect Band gap semiconductors, LED, Photodiodes.

UNIT–III:
Principles of Quantum Mechanics, Band Theory of Solids and Magnetic Properties:
Principles of Quantum Mechanics : Waves and particles, de-Broglie Hypothesis, Matter waves, Heisenberg Uncertainty principle, Applications of Heisenberg uncertainty principle, Schrodinger time independent wave equation, Physical significance of wave function, Particle in one dimensional potential box, Fermi Dirac Distribution function, Electron Scattering and Sources of electrical resistance.
Band Theory of Solids: Electron in a periodic potential, Kronig-Penny Model (qualitative treatment only), Origin of Energy Bands formation in Solids, Effective mass of electron, Classification of solids into Conductors, Semiconductors & Insulators based on Band theory.
Magnetic Properties: Magnetic susceptibility, Origin of Magnetic moment-Bohr magneton, Classification of magnetic materials, Domain theory of ferromagnetism, Hysteresis curve, Ferrites and its applications, Soft and hard magnetic materials.

UNIT – IV
Superconductivity & Nanotechnology
Superconductivity: Introduction, Properties of superconductors, Meissner Effect, Type – I and
Type – II Superconductors, Flux Quantization, Penetration Depth. Josephson Effect, BCS theory, Applications of superconductors, High Temperature Superconductors.
Nanotechnology: Origin of Nanotechnology, Nanoscale, Surface area to volume ratio, Quantum Confinement effect, Properties of nanomaterials, Electrical properties, Optical properties, Magnetic Properties, Mechanical properties, Fabrication of nanomaterials by Ball Milling, Plasma Arcing, Chemical vapour deposition, Sol-Gel method, Electrode position methods and Applications of Nanomaterials.
CNT-Introduction, Types, Properties, Production, Applications of CNTS, Graphene and Graphene based FET.

Text Books:
1. V. Rajendran, K.Thyagarajan Engineering Physics , III Edition, 2012.Tata MacGraw Hill Publishers

2. P.K.Palanisamy , Engineering Physics, II Edition 2010 Scitech Publishers.

Reference Books:

1. S. ManiNaidu ,Engineering Physics, I Edition, 2012. Pearson Education
2. M. Arumugam , Engineering Physics II Edition, 1997 , Anuradha Publications.
3. A.J. Dekkar , Solid State Physics , Latest edition, 2012. McMillan Publishers
4. Gaur and Gupta Dhanapati , Engineering Physics, 7th Edition, 1992 Rai Publishers ,.
5. B S Murthy, P.Shankar, Baldev Raj B BRath, James Murday , I Edition, 2012.
Text book of Nanoscience and Nanotechnology:, University Press,
6. H.S. Philip Wong, Deji Akinwande , Carbon Nanotubes and Graphene Device Physics –, Cambridge University Press, 2011.

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
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(13HS103) ENGINEERING CHEMISTRY

Objectives:

- The Chemistry course for undergraduate students is framed to strengthen the fundamentals of chemistry and then build an interface of theoretical concepts with their industrial/engineering applications.
- The extension of fundamentals of electrochemistry to energy storage devices such as commercial batteries and fuel cells is one such example.

UNIT – I:

Water Technology & Fuel Technology:

Water Technology: Sources of water, Hardness of water, units of hardness, Estimation of hardness by EDTA method, Analysis of water – Dissolved oxygen, Estimation of Chloride, Alkanity, Acidity.

Sterilization of water: Chlorination, Ozonisation, Addition of Bleaching powder.

Water for Industrial Purpose: Water for steam generation, Boiler troubles – priming and foaming, Boiler corrosion, sludges and scales, caustic embrittlement.

Water treatment: Internal treatment – colloidal, phosphate, calgon, carbonate and sodium aluminate conditioning. Softening methods of water – Ion exchange process. Determination of brakish water – Reverse Osmosis.

Fuel Technology: Definition, classification, characteristics of good fuel.

Solid fuels: Coal, classification, Metallurgical coke – characteristics and Manufacturing (Otto-Halfman's by product oven method)

Liquid fuels: Petroleum, origin, refining, and fractional distillation, synthetic petrol.

Gaseous fuels: Composition and preparation of producer gas, water gas, bio gas, coal gas, natural gas. Calorific Value and its Units, flue gas analysis by Orsat's apparatus.

Lubricants: Functions, Classification and Properties – viscosity, viscosity index, flash and fire point, pour and cloud point, aniline point, mechanical strength, neutralization number.

UNIT – II:

Electrochemistry and Science of corrosion:

Electrochemistry : Conductance, Equivalent conductance, Molecular conductance, conduct metric titrations, Applications of conductivity measurement., numerical calculations, review of electro chemical cells-Galvanic cells.

Batteries: Ni-Cd cell, Lithium ion cells, fuel cells – Hydrogen Oxygen Fuel cell, Methanol fuel cell.
Science of corrosion: Definition and Types of corrosion – Dry corrosion and wet corrosion. Galvanic series, Galvanic corrosion and concentration cell corrosion.
Factors influencing corrosion,
Control of corrosion: Use of inhibitors, Sacrificial Anode, Impressed current, Electroplating and Electro less plating (Cu and Ni).

UNIT – III:
Polymers and advanced Engineering Materials
Polymers: Basic concepts, Types of polymerization – Addition, condensation, co-polymerization.
Plastics: Thermoplastics and Thermosetting plastics, preparation, properties and Engineering uses of Teflon, PVC, Bakelite, Nylon.
Natural Rubber (Elastomers): Processing, Compounding, Vulcanization of Natural Rubber.
Synthetic Rubber: Buna – S, Buna – N, Poly urethane, poly sulphide and silicone Rubber.
Advanced Engineering Materials:
Conducting Polymers: Synthesis and Applications of poly acetylene, poly aniline.
Liquid Crystals: Definition, properties, and classification and Engineering applications.
Inorganic Polymers: Basic Introduction, Silicones, Polyphospazins (-(R) 2 – P = N -) and applications.

UNIT – IV:
Building Materials and Photo Chemistry
Cement: Definition, Composition and Manufacture of Portland cement, Analysis, setting and hardening of cement.
Refractories: Definition, classification, criteria of good Refractory- Refractoriness, Refractoriness under load, Chemical inertness, Dimensional stability, Thermal spalling, porosity, Thermal expansion, Thermal conductivity, Abrasion Resistance, Electrical conductivity. Causes for failure of refractories.
Photo Chemistry:
Photochemical Reactions, Difference between Photochemical reactions and thermochemical reactions. Absorption of light: Beer-Lambert's law.
Photo-physical Processes: (a) Fluorescence. (b) Phosphorescence and (c) Chemi-luminiscence applications.

Text Books:

1. Prof. K.N.Jayaveera, Dr.G.V.Subba Reddy and Dr.C. Ramachandraiah, , Engineering Chemistry Fourth Edition, 2012 McGraw Hill Higher Education, New Delhi.
2. Jain & Jain, Text book of Engineering Chemistry , 15th Edition 2009, Dhanpat Rai Publishing Company, New Delhi.

Reference Books:

1. S.S Dhara, S.S.Umare, A Text book of Engineering Chemistry ,12th Edition, 2010. S. Chand Publications, New Delhi,
2. K.B.Chandra Sekhar, UN.Das and Sujatha Mishra Engineering Chemistry , 2nd Edition, 2012 SCITECH, Publications India Pvt Limited, Chennai
3. K. Sesha Maheswaramma and Mrudula Chugh , Engineering Chemistry, First Edition, 2013 PearsonEducation
4. C.V. Agarwal, Chemistry of Engineering Materials Varanasi,2008. Tara Publication.

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	L	T	P	[C]
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(13HS104) ENGINEERING MATHEMATICS-I

Objectives: The Subject is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many engineering fields.

UNIT – I:
Differential & Integral Calculus
Mean Value Theorems – Rolle's, Lagrange's, Cauchy's, Taylor's, and Maclaurin's theorem (without proofs) with simple related problems.
Functions of several variables - Jacobian, functional dependence, Taylor's and Maclaurin's series(without proof) with two variables , maxima & minima of function of two and three variables.- Lagrange's method of multipliers with three variables only
Radius of Curvature – Cartesian, Polar, Parametric forms and Radius of Curvature at Origin (Newton's Method).
Curve Tracing – Cartesian, Polar, Parametric forms.
Multiple Integrals - Evaluation of Double Integrals – Change of Order of Integration- Change of Variables- Evaluation of Triple Integrals.

UNIT-II:
Ordinary Differential Equations:
Differential Equations of First Order and First Degree: Exact Differential Equations, Integrating factors, Linear Differential Equations, Bernoulli's Differential Equations, Orthogonal Trajectories of curves, Newton's Law of cooling, Law of Natural Decay & Growth.
Linear Differential Equations of Second or Higher Order: Homogeneous, Non -Homogeneous, Differential Equations of second and higher order with constant coefficients with RHS terms of the type e^{ax}, Sin ax/cos ax, Polynomial in x, $e^{ax}V$ [V is sin ax or cos ax or polynomial in x], $x^m V$ [V is sin ax/ cos ax], method of Variation of parameters.

UNIT III:
Laplace Transforms
Laplace transforms of standard functions – Inverse Laplace - First shifting Theorem, Transforms of derivatives and integrals – Unit step function – Second shifting theorem – Dirac's delta function – Convolution theorem – Laplace transform of Periodic function.
Differentiation and integration of Laplace transforms – Application of Laplace transforms to ordinary differential equations of first and second order.

UNIT IV:
Vector Calculus:
Vector Differentiation: Scalar and Vector point functions, Gradient of scalar point function, Directional derivatives – Divergence of a vector point function – Curl of a vector point function and their related properties.

Vector integration: Line integral - Work done – Vector potential function – Area, Surface and volume integrals. Green's theorem, Stoke's Theorem, and Gauss's Divergence Theorem (without proof), Applications of Green's , Stoke's and Gauss's Theorems.

Text Books:

1. T.K.V. Iyengar , Engineering Mathematics Volume-I , 12th Edition(2013) , S.Chand publication
2. E. Rukmangadachari & E. Keshava Reddy, Engineering Mathematics, Volume – I , 1st Edition (2010). Pearson Publisher

Reference Books:

1. Erwin Kreyszig , Advanced Engineering Mathematics, 10thEdition(2012), Wiley India.
2. B.S.Grewal ,Higher Engineering Mathematics, 42 Edition(2012), Khanna publishers .
3. Debashish Dutta ,Text Book of Engineering Mathematics, New Age International Publishers.
4. B.V.Ramana ,Higher Engineering Mathematics, Mc Graw Hill publishers(2008)

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
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(13HS105) ENGINEERING MATHEMATICS-II

Objectives: The course is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many engineering fields.

UNIT – I:

Matrix Algebra: Rank of a matrix – Normal form, Echelon form – Inverse of a matrix using elementary operations –Consistency of system of Linear equations (Homogenous and Non-homogeneous) Hermitian & Skew Hermitian- unitary matrices and their properties. Eigen Values and Eigen Vectors (Real and Complex Matrices) Cayley- Hamilton theorem and its applications. Diagonalization of a matrix – Reduction of a quadratic form to canonical form by orthogonal transformation.

UNIT-II:

Numerical Analysis: Numerical solutions of algebraic and transcendental equations by Regula – Falsi method, Newton – Raphson method, Bisection, and Iteration methods. Forward, backward differences, Newton's forward and backward interpolation formulae, Lagrange interpolation, Numerical differentiation formula for derivative using Newton's forward and backward differences. Numerical Integration with Trapezoidal rule, Simpson's 1/3 rule and Simpson's 3/8 rule. Taylor series method, Euler's method, Modified Euler's method, Runge-Kutta method of 2nd & 4th orders, for solving first order ordinary differential equations.

UNIT- III:

Fourier Series: Expansion of a function in Fourier series for a given range – Half range sine and cosine expansions. Complex form of Fourier series – Fourier transformation – sine and cosine transformations – simple illustrations.

Z-Transforms: Inverse Z-transforms-Damping Rule and shifting Rule, initial and final value theorems – Convolution theorem- Difference equations – Solution of difference equations using z – transforms

UNIT- IV :

Partial Differential Equations: Formation of Partial Differential Equations by elimination of arbitrary constants and arbitrary functions - Method of Separation of variables - Solutions of one dimensional wave equation, Heat Equation, and two dimensional Laplace's equation under initial and boundary conditions.

Text Books:

1. T.K.V. Iyengar ,Mathematical Methods , 8th Edition(2013) ,S. Chand publication.
2. E. Rukmangadachari & E. Keshava Reddy, Engineering Mathematics, Volume - II, Pearson Publisher-1st Edition (2010)

Reference Books:

1. B.S.Grewal ,Higher Engineering Mathematics, 42 Edition(2012),Khanna publishers. 2.
2. B.V.Ramana , Higher Engineering Mathematics, Mc Graw Hill publishers(2008).
3. Debashish Dutta,Text Book of Engineering Mathematics,New Age international Publishers.
4. Erwin Kreyszig,Advanced Engineering Mathematics, 10th Edition(2013),Wiley India.

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
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(13HS106) ENVIRONMENTAL SCIENCE

Objectives: The student should be conversant with the evolution and the importance of environmental studies, various natural resources and the current threats to their sustainability, significance and protection of bio diversity and various forms of environmental degradation causes, effects and control measures of various pollutants and international conventions and protocols for the protection of environment.

UNIT-I:

Introduction to Environmental Science and Natural Resources:

Environment: Definition, scope, importance – need for public awareness. Renewable and non-Renewable resources. Natural resources and associated problems. Forest resources: Use –over exploitation- deforestation - case studies. Mining, dams - effects on forests and tribal people. Water resources: Use – over utilization of surface and ground water. Floods, drought, conflicts over water. Mineral resources: Use – 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. Energy resources: Growing energy needs - renewable and non renewable energy sources. Use of alternate Energy sources, Impact of Energy use on Environment.

UNIT-II:

Ecosystems and Biodiversity:

Concept of an ecosystem: Structure and function of an ecosystem – producers, consumers, decomposers. Energy flow in the ecosystem. Ecological succession – food chains - food webs and ecological pyramids. Types of ecosystem: Introduction - characteristic features - forest ecosystem - grassland ecosystem - desert ecosystem - aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). Biodiversity: Introduction– definition, genetic - species –ecosystem diversity. Value of biodiversity: Consumptive use - productive use – social values – ethical values - aesthetic values. Biodiversity level: Global - national - local levels- India as a mega diversity nation- Hotspots 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 e*x-situ* conservation of biodiversity**.**

UNIT-III

Environmental Pollution :

Pollution: Definition Cause, effects and control measures of –air pollution - water pollution - soil pollution - marine pollution - noise pollution - thermal pollution - nuclear hazards. Solid waste management: Causes - effects - control measures of Rural/Urban/Industrial waste management [with case study of any one type, e.g., power, fertilizer, tannin, leather, chemical, sugar]. Role of an individual in prevention of pollution. Population growth and Environment, Environment and human health. Effects of human activities (Urbanization, Transportation, Industrialization, Green revolution) on the Quality of Environment.

UNIT-IV

Social issues and the Environment:

From Unsustainable to Sustainable development – Urban problems related to energy – Water conservation, rain water harvesting and watershed management – Resettlement and rehabilitation of people; its problems and concerns. Case studies – Environmental ethics: Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies – Wasteland reclamation. – Consumerism and waste products. Environment Protection Act. – Air (Prevention and Control of Pollution) Act.- Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness.

Field Work:

Visit to a local area to document environment assets River/ forest grassland/ hill/mountain – Visit to a local polluted site-Urban/Rural / Industrial/ Agricultural Study of common plants, insects, birds – river, hill slopes, etc

Text Books:

1. Text book of Environmental Studies for Undergraduate Courses by Erach. Bharucha for University Grants Commission, Universities Press.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.
3. Environmental Studies by Benny Joseph, Mc. Graw Hill Publications.

Reference Books:

1. Text book of Environmental Sciences and Technology by M.Anji Reddy, BS Publication.
2. Comprehensive Environmental studies by J.P. Sharma, Laxmi publications.
3. Environmental sciences and engineering – J. Glynn Henry and Gary W. Heinke – Printice hall of India Private limited.
4. Introduction to Environmental engineering and science by Gilbert M. Masters and Wendell P. Ela – Printce hall of India Private limited.
5. Environmental Studies by Anindita Basak – Pearson education.

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	L	T	P	[C]
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(13HS107) COMPUTER PROGRAMMING

Objectives: The primary objective is to develop the under – graduate students of Engineering a level of competence in IT required for independent and effective skills for academics and industry needs.

UNIT – I:
Introduction to Computers and Programming:
Introduction computers- What is a computer?, block diagram of computer, Computer characteristics, hardware, software, types of programming languages.
Introduction to computer problem solving: introduction, the problem solving aspects , top-down design, implementation of algorithms, program verification, Flow charts.
Introduction to C Language - C Language Elements, General form of a C Program, Variable declarations, Data types, Executable statements, Expressions, Precedence and Associativity, Expression Evaluation, Operators and Expressions, Type Conversions, Data Input and Output, Preparing and running a complete C program.

UNIT – II:
Control Statements:
Decision Statements: If, if-else, nested if and switch Statements, Loop Control Statements - while, for, do-while Statements, Nested Loops, Other Related Statements - break, continue, goto.
Functions: Function prototype, definition and accessing, passing arguments to a function, Library Functions, Scope of a function, Storage Classes - Auto, Register, Static, Extern, Scope rules, Type qualifiers, Recursion - Recursive functions, C Preprocessor, header files.

UNIT – III:
Arrays and Pointers:
Arrays: Declaring and Referencing arrays, Array subscripts, Using for Loops for Sequential access, Using array elements as function arguments, operations on Multidimensional Arrays.
Sorting and Searching: Bubble Sort, Selection Sort, Quick sort, Merge Sort, Linear and Binary Search Methods
Pointers: Introduction, Features of Pointers, Pointer Declaration, Arithmetic Operations with Pointers, Pointers and Arrays, Pointers and Two-Dimensional Arrays, Array of Pointers, Pointers to Pointers, Void Pointers, Memory Allocation Functions, Pointer to Functions, Command- Line Arguments.
Strings: String Basics, String Handling Functions, String Comparison, Searching and sorting of strings.

UNIT – IV:
Structure and Union
Structure and Union: Introduction, Features of structure, Declaration and Initialization of Structure, Structure within Structure, Array of Structures, Pointer to Structure, self referential Structures, Structures and Functions, type def and Enumerated data types, Unions, Bit fields
Files: Introduction, Streams and file types, Steps for file operations, File I/O structures, Read and Write, register variables and bitwise operations, File Status functions (error handling).

Text Books:

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

Reference Books:

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

I B.Tech (Common to CE & ME)	**L**	**T**	**P**	**[C]**
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(13HS108) ENGINEERING MECHANICS

Objectives: The course is aimed at developing the basic skills of Civil Engineering students that are imperative for effective understanding of Civil Engineering subjects. The topics introduced will serve as basic tools for specialized studies in civil engineering.

UNIT – I:

Basics of Engineering Mechanics: Basic Concepts of Engineering Mechanics: Introduction to Engineering Mechanics – Scalar and Vector – Forces – Characteristics of a force – Definitions and examples of various types of force systems – Definition of resultant – Composition and resolution of forces – Moment of a force – Principles of moments of force – Couples – characteristics of a couple – on Transformations of a couple – Resolution of a force into a force and couple.

Resultants of Force System: Possible resultants of different types of force systems – Resultant of a concurrent, coplanar force system – Resultant of a non-concurrent coplanar force system – Resultant of a concurrent non-coplanar force system – Resultant of a parallel, non-coplanar force system – Resultant of a system of couples in space – Resultant of non-concurrent, non-coplanar, non-parallel force system – screw of Wrench.

Equilibrium of Forces: Free body diagrams – Equations of equilibrium for a concurrent coplanar force system – Equilibrium of Bodies acted on by two or three forces – Equilibrium of bodies acted on by non-concurrent coplanar force system – Equilibrium of bodies acted on by parallel, non-coplanar force system – Equilibrium of non-concurrent, non-coplanar non-parallel force system

UNIT – II:

Frictional Resistance & Applications of Friction:

Frictional Resistance: Classification of friction- laws of friction –coefficient of friction-angle of friction – angle of repose – cone of friction – free body diagram-advantages-equilibrium of a body on a rough horizontal and inclined plane

Applications of Friction: Ladder friction – rope friction – wedge friction. Simple machines-concept of lifting machines-law of lifting machine – efficiency–mechanical advantages – velocity ratio and their relationship.

UNIT – III:
Centroids and Centers of Gravity & Moments of Inertia:
Centroid and Centers of Gravity: Definition – Centroid and centers of gravity simple and composite bodies – Theorems of Pappus
Moments of Inertia: Definition – Parallel axis theorem for areas – Second moments of areas by integration – Radius of gyration of areas – Moments of inertia of composite areas – Parallel axis and parallel plane theorems for masses – Moments of inertia of masses by integration – Radius of gyration of mass – Moments of inertia of composite masses(Simple problems only)

UNIT – IV:
Kinematics: Introduction, Rectilinear kinematics: Continuous motion, General curvilinear motion, Curvilinear motion: Rectangular components, Motion of a projectile, curvilinear motion: Normal and tangential components, Absolute dependent motion analysis of two particles
Kinetics: Newton's law of motion, The equation of motion, Equation of motion for a system of particles, Equation of motion: Rectangular coordinates, Equation of motion: Normal and tangential Coordinates.

Text Books:
1. B. Bhattacharya, Engineering Mechanics- Oxford University Publications, 2009
2. S.S. Bhavikatti, Engineering Mechanics, New Age Internationals, 2nd edition, 2010

References Books:
1. A. K. Tayal, "Engineering Mechanics", Umesh Publications, 2005.
2. Ferdinand.L.Singer, Engineering Mechanics (Statics and Dynamics), Harper Row Publishers.2007.
3. Shames.I.H, Engineering Mechanics (Statics and Dynamics), Prentice – Hall of India- New Delhi, 2004.
4. Timoshenko.S.P and Young.D.H, Engineering Mechanics, McGraw Hill Book Co. Ltd.2003.
5. S.Temoshenko,D.H.Young and J.V.Rao,Engineering Mechanics,Revised 4th Edition,Tata-McGraw-Hill Publishing Company Limited,New Delhi,2007.

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
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(13HS109) ENGINEERING DRAWING

Objectives: Increase ability to communicate with people, Learn to take data and transform it into graphic drawings and Learn basic engineering drawing formats

UNIT – I:
Introduction to Engineering Drawing: Introduction to Drawing Instruments and their uses, Lettering, Types of Dimensioning, Division of a Line, Construction of Polygons, Inscribing of polygons, Describing of polygons.
Conic Sections

Ellipse: Eccentricity method, Oblong method, Parallelogram method, Arc's of Circles method and Concentric Circles method.
Parabola: Eccentricity method, Rectangle method, Tangent method, Parallelogram method.
Hyperbola: Eccentricity method, Rectangular hyperbola, Asymptotes method, Two branches of Hyperbola (Arc's of Circles method),Abscissa- Ordinate- method.
Cycloids: General Cycloid, Epi-Cycloid, Hypo-Cycloid.

UNIT – II:
Projections of Points, Straight Lines, Planes:
Points: Introduction to Orthographic Projections, Describing of quadrants , First and Third angle projection – Position of points in 4 quadrants.
Straight Lines: Lines parallel to both the principal planes, perpendicular to one plane and parallel to another plane, lines inclined to one plane, lines inclined to both the planes, finding true lengths, true inclinations.
Planes: Projection of regular plane surfaces, planes parallel to one plane, planes inclined to one plane and inclined to both the planes.

UNIT– III:
Projection of Solids, Sections and Development of Solids:
Solids: Positions of regular solids(prism, cylinder, pyramid and cone) – Projection of Solids – Axis perpendicular to one plane and parallel to another plane, inclined to one plane and inclined to both the planes, Axis parallel to both the Principal planes.
Section of Solids: Section Planes and Sectional views of Right Regular Solids–Prism, Cylinder, Pyramid and Cone. True shapes of the sections.
Development of Solids: Development of Surfaces of Right Regular Solids – Prisms, Cylinder, Pyramid, Cone and their Sectional parts.

UNIT – IV:
ISOMETRIC AND ORTHOGRAPHIC PROJECTIONS
Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views– Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines.
Orthographic Projections – Conversion of pictorial views into orthographic views

Text Books:

1. N.D. Bhat, Engineering Drawing, Charotar Publishers, 52nd Revised and Enlarged : 2013
2. K.L. Narayana, P. Khanniah, Engineering Drawing, Publisher, Scitech

Reference Books:

1. Venugopal, K., A Textbook of Engineering Graphics , New age Publishers,2009
2. Venkata Reddy, Engineering Drawing, B.S.Publishers ,2009
3. Basant Agrawal, C M Agrawal ,Engineering Drawing ,2013
3. V.Ramesh Babu, Engineering Drawing .2009
4. Shah and Rana, 2/e, Engineering Drawing, Pearson education.2013

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	L	T	P	[C]
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(13HS110) COMPUTER PROGRAMMING LAB

Objectives:

- To make the student learn a programming language.
- To teach the student to write programs in C to solve the problems.
- To introduce the student to simple linear data structures such as lists, stacks, queues.

Recommended Systems/Software Requirements:
Intel based desktop PC with ANSI C Compiler and Supporting Editors

EXERCISE-1:
a) Write a C program to evaluate area of triangle (sqrt(s(s-a)(s-b)(s-c).
b) Write a C program to swap 2 numbers without using temporary variable.
c) Write a C program to print Sum of n natural numbers.
d) Programs on Expressions

EXERCISE-2:
a) Write a C program to calculate the following Sum:
Sum=1-x2/2! +x4/4!-x6/6!+x8/8!-x10/10!
b) Write a C program to find the roots of a quadratic equation.
c) Write a C program to print prime Numbers up to n numbers

EXERCISE-3:
a) Write a C program to find factorial of a number using while, do-while, for loops
b) Write a C program to determine if the given Number is a palindrome or not
c) Write a C program to determine if the given Number is a Armstrong or not

EXERCISE-4:
a) Write a program on matrices
i) Addition ii) Subtraction iii) Multiplication iv) Transpose
v) Sum of diagonal elements vi) Summing row wise and column wise

EXERCISE-5:
Programs on sorting and searching

EXERCISE-6:
a) Write a program to implement call by value and call by reference
b) Write a C program to print Fibonacci series using recursion and iteratively
c) Write a C program to find factorial of a number using recursion and iteratively

EXERCISE-7:
a) Write a C program to sort 5 city names in alphabetical order
b) Write a C program to determine if the given string is a palindrome or not.
c) Write a C program to implement string handling functions

EXERCISE-8:
a) Write a C program to print address of variable
b) Write a C program print the element of array using pointers

EXERCISE-9:
a) write a c program to find the total salary of employee and salary of employee details
b) write a C program to pass structure as an arguments to function and calculate total marks of 5 subjects

EXERCISE-10:
a) Write a C program to write and read data to and from files
b) Write a C program which copies one file to another.
c) Write a C program to reverse the first n characters in a file.

EXERCISE-11:
Programs on command line arguments

EXERCISE-12:
Programs on self referencing

Reference Books:
1. M.Cooper, The Spirit of C, an introduction to modern programming, Jaico Publishing House.
2. K.R. Venugopal and S.R. Prasad, Mastering C, TMH Publications,2006.
3. V. Rajaraman, Computer Basics and C Programming, PHI Publications.

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[4]**

(13HS111) ENGINEERING WORKSHOP AND I.T. WORKSHOP

ENGINEERING WORKSHOP

Objectives: The Engineering Workshop for engineers is a training lab course. It imparts the required knowledge about producing the Products particular joining methods, manufacturing methods among the students through which they will get an idea about shop floor level, a manufacturing section in industry.
1: Trades for Exercises:
(a) Carpentry Shop
1. Cross Lap Joint
2. Mortise and Tenon Joint
(b) Fitting Shop
1. Square Fitting
2. V Fitting
(c) Sheet Metal Shop
1.3-Sided Tray (Trapezoidal Tray)

2. Cylinder (Circular Tin)

(d) House Wiring

1. Wiring for two lamps (bulbs) with independent switch controls with or without looping
2. Wiring for stair case lamp.

(e) Foundry

1. Single Piece Pattern
2. Double Piece Pattern.

(f) Welding

1. Lap Joint
2. T - Joint

2: Trades for Demonstration

i. Machine Shop (Lathe Machine, Grinding Machine and Drilling Machine)
ii. Metal Cutting
iii. Plumbing

In addition to the above, hand tools, hand machines, models of jobs, materials with names such as different woods, wood faults, plastics, steels, meters, gauges, equipment, first-aid and shop safety shall be demonstrated through charts, layouts, figures, circuits, CD or DVD.

Reference Books:

1. Engineering Work shop practice, V. Ramesh Babu, VRB Publishers Private Limited, 2009
2. Work shop Manual, P.Kannaiah and K.L.Narayana, SciTech Publishers, 2009
3. Workshop Practice Manual, K. Venkata Reddy, BS Publications,

I.T. WORKSHOP

Objectives: The IT Workshop for engineers is a training lab course. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel, Power Point and Publisher.

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. The students should work on a working PC (PIV or higher)to disassemble and assemble back to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible.

CHAPTER – I: PC Hardware

Task – 1:

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

Task – 2:

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

Task – 3:

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

Task – 4:

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

Task – 5:
Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

CHAPTER - II: Word Processor
Task – 1:
Introduction to Ms Word, importance of Word as Word Processor, overview of toolbars, saving, accessing files, using help and resources.
Task – 2:
To create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.

CHAPTER –III: Spread Sheets
Task –1:
The mentor needs to tell the importance of MS office 2007/ equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.
Task –2:
Features to be covered:- Gridlines, Format Cells, Summation, auto fill, Formatting Text
Task –3:
Create student marks list for 10 students using for the formulas
CHAPTER –IV: Presentation
Task –1:
Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this Exercise includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and Powerpoint. Students will be given model power point presentation which needs to be replicated (exactly how it's asked).
Task –2:
Second Exercise helps students in making their presentations interactive. Topic covered during this Exercise includes : Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts

CHAPTER – V: Internet & World Wide Web
Task –1:
Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.
Task –2:
Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers.
Task –3:
Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated by the student to the satisfaction of instructors.
Task – 4:

Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install an antivirus software, configure their personal firewall and windows update on their computer.

Text Books:

1. ITL Education Solutions limited, Introduction to Information Technology, Pearson Education,2005.
2. Peter Norton, Introduction to Computers, 6/e Mc Graw Hill

Reference Books:

1. Leslie Lamport, LaTeX Companion –PHI/Pearson.
2. Scott Muller QUE, Upgrading and Repairing, PC's 18th e, Pearson Education,2007.
3. Vikas Gupta, Comdex Information Technology course tool kit, WILEY Dreamtech
4. David Anfinson and Ken Quamme. IT Essentials PC Hardware and Software Companion Guide, Third Edition by– CISCO Press, Pearson Education,2008.

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
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(13HS112) ENGINEERING PHYSICS AND ENGINEERING CHEMISTRY LAB

Objectives: Educate the theoretical concepts experimentally.

ENGINEERING PHYSICS LAB

1. Dispersive power of the prism – Spectrometer.
2. Determination of wavelength of given source- Spectrometer-Normal Incidence Method.
3. Determination of wavelength of a laser source - Diffraction Grating.
4. Determination of particle size by using a laser source.
5. Newton's Rings.
6. Magnetic field along the axis of a current carrying coil – Stewart and Gee's method.
7. Numerical aperture of an optical fiber.
8. B – H Curve.
9. Energy gap of a material of p-n junction
10. Determination of rigidity modulus of a wire material – Torsional pendulum
11. Melde's experiment – Transverse & Longitudinal modes.
12. Hall Effect

ENGINEERING CHEMISTRY LAB

1. Preparation of Standard Potassium Dichromate and Estimation of Ferrous Iron.
2. Preparation of Standard Potassium Dichromate and Estimation of Copper, by Iodometry.
3. Preparation of Standard EDTA solution and Estimation of Hardness of Water.
4. Determination of Alkanity of water.
5. Preparation of Standard EDTA and Estimation of Copper

6. Determination of strength of the given Strong acid and weak acid against standard strong base solution by Conductometric titration
7. Determination of viscosity of the oils through Redwood viscometer (i) and (ii)
8. Flash point and Fire point apparatus.
9. Estimation of dissolved oxygen through Winklers method.
10. Preparation of phenol-formaldehyde resin (Bakelite)
11. Determination of Chlorine in Bleching powder and Iodine in Iodised salt.
12. Estimation of Chloride ion using potassium chromate indicator by mhor's method.

Reference Books:

1. J. Mendham et al ,Vogel's Text book of Quantitative Chemical Analysis, Sixth Edition, 2012, Pearson Education,.
2. K.B.Chandra Sekhar, G.V. Subba Reddy and K.N.Jayaveera, Chemistry Practical – Lab Manual ,SM Publications, 3rd Edition, 2012Hyderabad.
3. Vogel's Book of Quantitative Inorganic Analysis, ELBS Edition.

I B.Tech (Common to ECE, EEE, CSE, CE & ME)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[4]**

(13HS113) ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

Objectives: To equip students with effective speaking and listening skills in English, help them develop the soft skills and people skills which will make them to excel in their jobs and enhance to students' performs at placement interviews

UNIT – I:
Activity– 1: Introduction to the Sounds of English- Vowels, Diphthongs & Consonants.
Activity– 2: Situational Dialogues (Giving Directions etc.)

UNIT – II:
Activity– 3: Speaking on the mobiles and telephone conversation
Activity– 4: Role Play
Activity– 5: 'Just A Minute' Sessions (JAM).

UNIT – III:
Activity– 6: Describing Objects / Situations / People in spoken and written formats.
Activity– 7: Information Transfer

UNIT – IV:
Activity– 8: Debate & Group Discussion.
Activity– 9: Reading Comprehension

Reference:

1. Daniel Jones, English Pronouncing Dictionary, Current Edition with CD.
2. R. K. Bansal and J. B. Harrison, Spoken English, Orient Longman 2006 Edn.
3. Krishna Mohan & NP Singh, Speaking English Effectively, (Macmillan)

4. J. Sethi, Kamlesh Sadanand & D.V. Jindal, A Practical Course in English Pronunciation, (with two Audio cassettes), Prentice-Hall of India Pvt. Ltd., New Delhi.
5. Dr Shalini Verma , Body Language- Your Success Mantra , S.Chand & Co, 2008
6. English Dictionary for Advanced Learners, (with CD) International edn. Macmillan 2009

Electronics & Communication Engineering

II B.Tech I Semester (ECE)	L	T	P	[C]
	3	0	0	[3]

(13HS114) ENGINEERING MATHEMATICS-III

Objectives: The Subject is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many engineering fields.

UNIT – I:
Special Functions: Gamma and Beta functions – their properties – Evaluation of Improper integrals. Bessel functions – properties – Recurrence relations – orthogonal. Legendre polynomials – Properties – Rodrigue's formula – Recurrence Relations – Orthogonality

UNIT-II:
Functions of a Complex Variable: Continuity – Differentiability – Analyticity – Properties – Cauchy – Riemann Equations in Cartesian and polar co-ordinates. Harmonic and Conjugate Harmonic function – Milne – Thomson method – Elementary functions – Exponential, trigonometric, Hyperbolic functions and their properties – General power z^C(c is complex), principal value.
Conformal Mapping: Transformation by e^z, 1nz, z^2, sinz, cos z, Bilinear transformation – Translation, rotation, magnification and inversion – Fixed point – cross ratio – Determination of bilinear Transformation mapping three given points.

UNIT - III:
Complex Integration: Line Integral – Evaluation along a path and by Indefinite Integration – Cauchy's Integral theorem – Cauchy's integral formula – General Integral formula.
Complex power series: Radius of convergence – Expansion in Taylors Series – Maclaurin's Series and Laurent Series. Singular point – Isolated singular point – pole of order 'm' – Essential singularity.

UNIT – IV
The Calculus of Residue – Evaluation of residue by formula and by Laurent series – Residue theorem – Evaluation of integrals of the type.

(a) Improper real integral $\int_{-\alpha}^{\alpha} f(x)dx$.

(b) $\int_{0}^{2\pi} f(\cos\theta, \sin\theta)d\theta$.

(c) $\int_{-\alpha}^{\alpha} e^{imx} f(x)dx$.

(d) Integrals by indentation

Argument Principle – Rouche's theorem – determination of number of zeros of complex polynomials – maximum modulus principle – Fundamental theorem of Algebra, Liouville's Theorem.

Text Books:

1. T.K.V. Iyengar, B. Krishna Gandhi and Others ,A Text Book of Engineering Mathematics, Vol – III, , S. Chand & Company.
2. E. Rukmangadachari and E. Keshava Reddy ,A Text Book of Engineering Mathematics-III, , Pearson Education.

Reference Books:

1. B.S.Grewal ,Higher Engineering Mathematics, 42 Edition(2012), Khanna publishers .
2. C. Sankaraiah ,A Text Book of Engineering Mathematics, , V.G.S. Book Links.
3. B.V.Ramana ,Higher Engineering Mathematics, Mc Graw Hill publishers(2008)
4. Chruchile and Brown -Complex variables
5. Schaum series -Complex variables

II B.Tech I Semester (ECE)	**L**	**T**	**P**	**[C]**
	2	**0**	**0**	**[2]**

(13HS120) PROFESSIONAL ETHICS AND HUMAN VALUES

Objectives:

- To create an awareness on Engineering Ethics and Human Values
- To instill Moral and Social Values and Loyalty
- To appreciate the rights of others.

UNIT-I:

Human Values: Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality

UNIT-II:

Engineering Ethics: Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT-III:

Engineering as Social Experimentation: Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

UNIT-IV:

Safety, Responsibilities and Rights: Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies.
Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

Text Books:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

Reference Books:

1. Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.

II B.Tech I Semester (ECE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13EC301) NETWORK THEORY

Objectives: Circuit Theory is the foundation for all the subjects of Electrical Engineering discipline. The emphasis of this course is laid on the basic concepts & analysis of DC circuits, Single phase AC circuits, network theorems, magnetically coupled circuits and graph theory.

UNIT – I:

Introduction to Electrical Circuits: *Circuit Concept – R-L-C parameters – Voltage and Current sources – Independent and dependent sources- Source transformation – Voltage – Current relationship for passive elements (for different input signals-square, ramp, saw tooth, triangular).*

Magnetic Circuits - Magnetic Circuits – Faraday's laws of electromagnetic induction – concept of self and mutual inductance – dot convention – coefficient of coupling – Analysis of series and parallel magnetic circuits.

UNIT – II:

Network Analysis: Kirchhoff's laws – network reduction techniques – series, parallel, series-parallel. Star-to-delta and delta-to-star transformation. Nodal Analysis, mesh analysis, super node and super mesh for D.C excitations.

Single Phase A.C Circuits: *R.M.S and Average values and form factor for different periodic wave forms- sinusoidal, square, ramp, saw tooth etc., Phase and phase difference- Complex and Polar forms of representation - J-notation –Steady-state analysis of R, L and C (in series, parallel and series-parallel combinations) with sinusoidal excitation. Concepts of Reactance, Impedance, Susceptance, Admittance, power factor, Apparent, Real & Reactive power, Complex power. Phasor diagrams and analysis.*

UNIT – III:

Network Theorems I: Superposition, Thevenin's, Norton's and Reciprocity theorems. Analysis with D.C. & sinusoidal excitations.

Network Theorems II: compensation, maximum power transfer, Tellegen's , millman's theorems. Analysis with D.C. & sinusoidal excitations.

UNIT – IV:

Locus Diagrams & Resonance: Locus diagrams – series R-L, R-C, R-L-C combination with variation of R, L & C parameters. Resonance – series, parallel circuits, concept of band width and Q-factor.

Network Topology: *Definition & Concepts: Graph – Tree, Basic cutset and Basic Tieset matrices for planar networks – Loop and Nodal methods of analysis of Networks with dependent and independent voltage and current sources - Duality & Dual networks.*

Text Books:

1. W.H.Hayt, J.E.Kimmerly, and S.M.Durbin "Engineering circuit analysis" McGraw Hill Education private limited, 6th Edition, 2002.
2. M.E Van Valkenburg, "Network Analysis" Prentice Hall of India, 3rd Edition, 2000.

Reference Books:

1. C. K. Alexander and M. N. O. Sadiku, "Fundamentals of Electric Circuits" Tata McGraw-Hill, 2nd edition, 2004.
2. Mahmood Nahvi, Joseph Edminister, "Electric Circuits" Schuam Series, 5th edition, 2011.
3. Chakrabati A, "Circuit Theory (Analysis and Synthesis)" Dhanpath Rai & Sons, 6th edition, 2004.
4. Mahmood Nahvi and Joselph Edminister, "Electric Circuits" Schaum's Outline series, TMH- 2004.
5. Ravish R Singh, "Electrical Networks" Tata McGraw-Hill Publication, 6th edition, 2010.
6. A. Sudhakar and Shyammohan S Palli, "Circuits & Networks" Tata McGraw-Hill, 4th edition, 2010.

II B.Tech I Semester (ECE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13EC302) ELECTRONIC DEVICES AND CIRCUITS

Objectives: Students undergoing this course are expected to:

- Know the formation and properties of semiconductor materials & Understand the operation of diode
- Understand various types of rectifiers and Understand the importance of regulators
- Explain the operation of transistor and Know the need for biasing of transistor
- Explain the operation of transistor as amplifier.

UNIT- I:

Semiconductor Physics &P-N Junction Diode: Semiconductor Materials ,Intrinsic & Extrinsic Materials ,Doping Concentrations ,Continuity equation, Drift &diffusion velocity ,Hall effect, P-N junction Manufacturing types, diode equation, V-I characteristics ,Temperature dependence, Static & Dynamic resistance, Diode equivalent Circuit, Break down mechanism, Zener diode and its characteristic. Study of Photo Diode, Varactor diode, and Schottky diode

UNIT- II:

Rectifiers and Filters: P-N junction as rectifier ,Half wave ,Full wave (center tap, Bridge)rectifiers, Average current, RMS current, Rectifiers efficiency, Ripple factor ,Form Factor, Percentage of regulation, Peak inverse voltage, Problems on rectifiers.
Filters: Capacitor, Inductor Filters-section filter, π-Section filter, Problems on filters, Zener diode as voltage regulator

UNIT- III:
BJT, Transistor Biasing & Stabilization:
Transistor construction, Operation and Configurations, V-I Characteristics, Relation between Transistor Parameters(α,β,γ),Comparison between BJT Configurations ,Analysis of Q-points and Load Lines(AC,DC), Need for Biasing, Types of Biasing Techniques and their stabilization factors (I_{CEO},V_{BE}, β &S) , Thermal runaway ,Problems on Biasing , BJT as Switch and Amplifier

UNIT- IV:
Field Effect Transistor: Introduction to FET, Types of FETs, Construction, Operations and Characteristics of JFET and MOSFET, FET Configurations, Comparison of JFET &MOSFET, Comparision between BJT and FET. Biasing of JFET and MOSFET, Problems on biasing. Principal of operation and Characteristics of UJT.

Text Books:

1. Jacob Millman, Christos C Halkias & Satyabratajit, Electronic Devices and Circuits, TMH, 2nd edition, 2008.
2. Robert L Boylested and Louis Nashelsky, Electronic Devices and Circuit Theory, Pearson India, 9th edition, 2007.

Reference Books:

1. NN Bhargava, DC Kulshrestha and SC Gupta , Basic Electronics and Linear Circuits, TMH, 1 edition 2003..
2. Millman and Grabel , Microelectronics, Tata McGraw Hill, 2 edition**,** 1988.

II B.Tech I Semester (ECE)	**L**	**T**	**P**	**[C]**
	3	**0**	**0**	**[3]**

(13EC303) PROBABILITY THEORY AND STOCHASTIC PROCESS

Objectives: Students undergoing this course are expected to:

- Solve problems related to conditional and joint probability
- Solve problems based on density functions and cumulative density functions
- Solve problems on mean , variance and standard deviations of random signals
- transform random variables in one domain to other
- Solve problems on joint and conditional distribution functions
- Solve problems on Different density functions and cumulative distribution functions
- Plot and study power spectral density and system response

UNIT – I:
Probability & The random Variable:
Probability introduced through sets and Relative Frequency: Experiments and Sample Spaces Discrete and Continuous Sample Spaces, Events, Probability Definitions and Axioms, Mathematical Model of

Experiments, Probability as a Relative Frequency, Joint Probability, Conditional Probability, Total Probability, Bayes' Theorem and Independent Events.

Definition of a Random Variable, Conditions for a Function to be a Random Variable, Discrete, Continuous and Mixed Random Variable, Distribution and Density functions and their Properties- Binomial, Poisson, Uniform, Gaussian, Exponential, Rayleigh and Conditional Distribution, Methods of defining Conditioning Event, Conditional Density, Properties.

UNIT – II:

Operation on One Random Variable & Multiple Random variables:

Introduction, Expected Value of a Random Variable, Function of a Random Variable, Moments about the Origin, Central Moments, Variance and Skew, Chebychev's Inequality, Characteristic Function, Moment Generating Function, Transformations of a Random Variable: Monotonic Transformations for a Continuous Random Variable, Nonmonotonic Transformations of Continuous Random Variable, Transformation of a Discrete Random Variable.

Vector Random Variables, Joint Distribution Function, Properties of Joint Distribution, Marginal Distribution Functions, Conditional Distribution and Density– Point Conditioning, Conditional Distribution and Density–Interval conditioning, Statistical Independence, Sum of Two Random Variables, Sum of Several Random Variables, Central Limit Theorem (Proof not expected), Unequal and Equal Distributions.

UNIT –III:

Operations on Multiple Random Variables & Stochastic Process:

Expected Value of a Function of Random Variables: Joint Moments about the Origin, Joint Central Moments, Joint Characteristic Functions, Jointly Gaussian Random Variables: Two Random Variables case, N Random Variable case, Properties, Transformations of Multiple Random Variables, Linear Transformations of Gaussian Random Variables.

Concept of Stochastic Process, Classification of Processes, Deterministic and Nondeterministic Processes, Distribution and Density Functions, concept of Stationary and Statistical Independence, First-Order Stationary Processes, Second- Order and Wide- Sense Stationarity, Nth- Order and Strict- Sense Stationarity.

UNIT –IV:

Temporal Characteristics & Special Characteristics:

Time Averages and Ergodicity, Mean-Ergodic Processes, Correlation-Ergodic Processes, Autocorrelation Function and its Properties, Cross- Correlation Function and its Properties, Covariance and its Properties, Linear system Response of Mean and Mean- Squared value, Autocorrelation Function, Cross-Correlation Functions, Gaussian Random processes and Poisson Random Process.

Power Spectrum: Properties, Relationship between Power Spectrum and Autocorrelation Function, Cross- Power Density Spectrum, Properties. Relationship between Cross- Power Spectrum and Cross-Correlation Function, Spectral Characteristics of System Response: Power Density Spectrum of Response, Cross- Power Spectral Density of Input and Output of a Linear System.

Text Books:

1. Peyton Z. Peebles, Probability, Random Variables and Random Signal Principles, TMH, 4th Edition,2002.
2. Athanasios Papoulis and S.Unnikrishna Pillai, Probability, Random Variables and Stochastic Processes,TMH, 2nd Edition 2002.
3. H.Taub. Donald. L.Schilling, Goutam Saha, Principles of Communication systems , TMH, 3rd edition 2008.
4. Pradip Kumar Ghosh, Theory of Probability and Stochastic Processes , University Press, 1st edition,2010.

Reference Books:

1. Mallikarjuna Reddy, Probability Theory and Stochastic processes, cengage Learning. 1st edition 2010.
2. *John W Woods, Henry Stark, Probability and Random processes with application to signal processin, Pearson Education, 3rd Edition, 2011.*
3. George R. Cooper, Clare D.Mc Gillem, Probability methods of Signal and System Analysis, Oxford. 3rd Edition,1999,
4. S.P.Eugene Xavier , Statistical Theory of Communication, , New Age Publications, 1st edition 2003.

II B.Tech I Semester (ECE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13EC304) SIGNALS AND SYSTEMS

Objectives: Students undergoing this course are expected to:

- Differentiate between continuous and discrete time signals
- Know Fourier representation of signals
- Emphasize on Fourier spectrum of signal
- Know the Ideal characteristics of filters
- Know the Significance of Sampling
- Concept of region of convergence(ROC)

UNIT – I:

Introduction to Signals, Fourier Series:

Analogy between vectors and signals, orthogonal signal space, Signal approximation using orthogonal functions, Mean square error, closed or complete set of orthogonal functions, Orthogonality in complex functions. Representation of function by a set of mutually orthogonal functions. Classification of signals, elementary signals, basic operations on signals, classification of systems, basic system properties

Fourier series representation of Continuous-time periodic signals, Convergence of the Fourier Series, Properties of Continuous time Fourier Series, the complex Fourier spectrum

UNIT – II:

Fourier Representation of Aperiodic Signals: The Continuous-time Fourier Transform, Fourier transforms of standard signals, Fourier transform for periodic signals, Properties of the continuous time Fourier transform.

Linear time invariant systems: impulse response, input-output relation for a linear system, transfer function of an LTI system, filter characteristics of a linear system, distortionless transmission through a system, signal and system bandwidth, ideal filter characteristics, causality and Paley-Wiener criterion for physical realization

UNIT – III:
Sampling theorem for band-limited signals, types of sampling, effect of undersampling- Aliasing.
Correlation: Convolution and Correlation, graphical analysis of convolution, autocorrelation and cross correlation, energy density spectrum, parseval's theorem, power density spectrum, relation between autocorrelation and spectral density function, relation between convolution and correlation.

UNIT – IV
Laplace transforms: Review of Laplace transforms, Properties of L.T's, Inverse Laplace transform, Concept of region of convergence (ROC) for Laplace transforms, constraints on ROC for various classes of signals, Relation between L.T's, and F.T. of a signal.
Z–Transforms: Introduction, The Z-transform, The region of convergence for the Z-transform, The Inverse Z-transform: Properties of Z-transform, Analysis and characterization of LTI systems using Z-transforms

Text Books:
1. B.P. Lathi, Signals, Systems & Communications, BS Publications, 1 edition 2008.
2. A.V. Oppenheim, A.S. Willsky and S.H. Nawab , Signals and Systems, PHI, 2nd Edition, 2009.
3. Simon Haykin and Van Veen ,Signals & Systems, Wiley, 2nd Edition, 2007.

Reference Books:
1. Michel J. Robert , Fundamentals of Signals and Systems, MGH International Edition, 2008.
2. M.J.Roberts , Signals and Systems Analysis using Transform method and MATLAB , TMH, 1st edition, 2007.

II B.Tech I Semester (ECE)	**L**	**T**	**P**	**[C]**
	3	**0**	**0**	**[3]**

(13EC305) DATA STRUCTURES THROUGH C

Objectives: The objective of this course is to teach students various data structures and to explain them algorithms for performing various operations on these data structures.
The course aims are:
- Demonstrate familiarity with major algorithms and data structures.
- Analyze performance of algorithms.
- Choose the appropriate data structure and algorithm design method for a specified application.
- Determine which algorithm or data structure to use in different scenarios.
- Be familiar with writing recursive methods.

UN IT-I:

Algorithms: Definition, Properties, Performance Analysis- Space Complexity, Time Complexity, Asymptotic Notations and their Significance.

Introduction to Data structures: Elementary Data Organization, Data Structures - types, Data Structure Operations.

Arrays: Introduction, Linear Arrays, Representation of Linear Arrays in Memory, Traversing Linear Arrays, Inserting and Deleting. Multi Dimensional Arrays- two dimensional Arrays, Representation Of Two Dimensional Arrays in Memory, Pointer Arrays.

UNIT-II:

Stacks: Introduction, Stacks, Array Representation of Stacks, Evaluation of a postfix expression, Transforming Infix expression into Postfix expression, Recursion.

Queues: Introduction, Array Representation of Queues, implementation of Queue. Circular Queue – Representation and implementation, Priority Queue, Double Ended queue.

UNIT-III:

Linked Lists: Introduction, Representation of Linked List in Memory, Traversing a Linked List, Searching a Linked List, Insertion into a Linked List, and Deletion from Linked List. Header Linked Lists. Doubly Linked List, Circular Linked List. Linked Representation of Stacks, Linked Representation of Queues.

Trees: Definition, terminology. Binary Trees: Definition, properties, Complete Binary tree, Full Binary tree, Representation of Binary tree – Array based representation, Linked Representation. Common binary tree operations, binary tree traversals- Preorder, Inorder, Postorder.

UNIT-IV:

Binary Search Trees – Definitions, Searching and Insertion into Binary Search Tree, Deleting from Binary Search Tree.

Searching: Linear search, Fibonacci Search, Binary search and their time complexities, Hashing.

Sorting: definition, Internal Sorting- Bubble sort, selection sort, insertion sort, quick sort, merge sort, heap sort, radix sort and time complexities of each Technique.

Text Books:

1. Seymour lipschutz 'Theory and Problems of Data Structures' - schaum's outline sries. TMH

Reference Books:

1. Y. Langsam, M.J.Augenstein, A.M.Tenenbaum, 'Data structures using C ', Pearson Education, Second Edition, 2002.
2. E.Balaguruswamy,' C and Data Structures' TMH Publication, 2003
3. M. A. Weiss, "Data Structures and Algorithm Analysis in C", 2nd ed, Pearson Education Asia.
4. G A V Pai – Data Structures and Algorithms: Concepts, Techniques and Applications, 2nd Edn, Tata McGraw-Hill, 2008
5. J. Tremblay, P. soresan, 'An Introduction to data Structures with applications', TMH Publication, 2nd Edition, 1984.

II B.Tech I Semester (ECE)	L	T	P	[C]
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(13EC306) DATA STRUCTURES LAB

Objectives:

- To develop skills to design and analyze simple linear and non linear data structures
- To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
- To Gain knowledge in practical applications of data structures

Recommended Systems/Software Requirements:

- Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space
- C compiler is Recommended

1. Write C program to implement the Stack using an Array.
2. Write a C program that uses Stack operations to perform the following:
   i) Converting infix expression into postfix expression
   ii) Evaluating the postfix expression
3. Write C program to implement the Queue using an Array.
4. Write a C Program to perform the following operations on Singly linked list
   i) creation ii) insertion iii) deletion iv) search v) display
5. Write C program to implement the Stack using Singly Linked List.
6. Write C program to implement the Queue using Singly Linked List.
7. Write a C Program to perform the following operations on doubly linked list
   i) creation ii) insertion iii) deletion iv) search v) display
8. Write C programs to implement the deque (double ended queue) using a doubly linked list.
9. Write a C program to create binary tree and traverse the binary tree in
   i) Pre order ii) In order iii) Post order
   (Write both recursive and non recursive functions)
10. Write C programs to implement the following search methods
    i) Linear Search ii) Binary search
11. Write C programs for implementing the following sorting methods:
    i) Bubble sort ii) Selection Sort
12. Write C Programs for implementing the following sorting methods
    i) Insertion ii) Quick sort
13. Write C programs for implementing the following sorting methods
    i) Heap Sort ii) merge sort

II B.Tech I Semester (ECE)	L	T	P	[C]
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(13EC307) ELECTRONIC DEVICES AND CIRCUITS LAB

Objectives: This lab course is intended to

- Know the usage of electronic equipment
- Know the testing of components
- Understand the PN diode operation in forward and reverse bias
- Know the characteristics of Half and Full wave rectifier with and without filters
- Know how to connect transistor in CB,CE configurations

For Laboratory examination – Minimum of 10 experiments

- Identification and Testing of Components
- Study & Demonstration of Sourcing Instruments
- Study & Demonstration of Measuring Instruments

1. PN Junction diode characteristics A. Forward bias B. Reverse bias.
2. Zener diode characteristics
3. Transistor CB characteristics (Input and Output)
4. Transistor CE characteristics (Input and Output)
5. Half wave rectifier, Half wave rectifier with capacitor filter.
6. Full wave center tapped rectifier with and without capacitor filter.
7. FET characteristics
8. Design of self bias for CE configuration
9. Design of Zener regulator.
10. Design of series voltage regulator.
11. Design of shunt voltage regulator.
12. UJT characteristics

II B.Tech I Semester (ECE)	L	T	P	[C]
	0	0	3	[3]

(13EC308) SIGNALS AND SYSTEMS LAB

Objectives: Students undergoing this course are expected to:

- Differentiate between continuous and discrete time signals
- Know Fourier representation of signals
- Emphasize on Fourier spectrum of signal
- Know the Ideal characteristics of filters

- Know the Significance of Sampling
- Concept of region of convergence(ROC)

(For Laboratory examination – Minimum of 10 experiments) using MATLAB

1. Write a program to generate the discrete sequences (i) unit step (ii) unit impulse (iii) ramp (iv) periodic sinusoidal sequences. Plot all the sequences.
2. Find the Fourier transform of a square pulse .Plot its amplitude and phase spectrum.
3. Write a program to convolve two discrete time sequences. Plot all the sequences. Verify the result by analytical calculation.
2. Write a program to find the trigonometric Fourier series coefficients of a rectangular periodic signal. Reconstruct the signal by combining the Fourier series coefficients with appropriate weightings.
3. Write a program to find the trigonometric and exponential fourier series coefficients of a periodic rectangular signal. Plot the discrete spectrum of the signal.
4. Generate a discrete time sequence by sampling a continuous time signal. Show that with sampling rates less than Nyquist rate, aliasing occurs while reconstructing the signal.
5. The signal x (t) is defined as below. The signal is sampled at a sampling rate of 1000 samples per second. Find the power content and power spectral density for any signal.
6. Write a program to find the magnitude and phase response of first order low pass and high pass filter. Plot the responses in logarithmic scale.
7. Write a program to find the response of a low pass filter and high pass filter, when a speech signal is passed through these filters.
8. Write a program to find the autocorrelation and cross correlation of sequences.
9. Generate a uniformly distributed length 1000 random sequence in the range (0,1). Plot the histogram and the probability function for the sequence. Compute the mean and variance of the random signal.
10. Generate a Gaussian distributed length 1000 random sequence. Compute the mean and variance of the random signal by a suitable method.
11. Write a program to generate a random sinusoidal signal and plot four possible realizations of the random signal.
12. Generate a discrete time sequence of N=1000 i.i.d uniformly distributed random numbers in the interval (-0.5,-0.5) and compute the autocorrelation of the sequence.
13. Obtain and plot the power spectrum of the output process when a white random process is passed through a filter with specific impulse response.

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(13HS118) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Objectives: To explain the basic principles of managerial economics, accounting and current business Environment underlying business decision making

UNIT- I:

Introduction to Managerial Economics: Definition, Nature and Scope of Managerial Economics–Demand Analysis: Determinants, Law of Demand and its exceptions.

Elasticity of Demand: Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, methods, (survey methods, statistical methods, expert opinion method, test marketing, controlled experiments, judgmental approach to demand forecasting)

UNIT- II:
Theory of Production: Production Function – Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale.
Cost Analysis: Cost concepts, Opportunity cost, Fixed vs. Variable costs, Explicit costs Vs. Implicit costs, Out of pocket costs vs. Imputed costs.
Break-Even Analysis : (BEA)-Determination of Break-Even Point (simple problems)
Market: Types of competition, Price-Output Determination in case of Perfect Competition and Monopoly, Monopolistic competition.
Methods of Pricing: Cost, competition, strategy based pricing

UNIT -III:
Business Types: Business, features, Sole Proprietorships, Partnerships, Joint Stock Companies, Public Enterprises and their types.
Capital and Capital Budgeting: Capital and its significance, Types and sources of raising finance. Nature and scope of Capital Budgeting, Features, Methods: Payback Method, Accounting Rate of Return Method (ARR) and Net Present Value Method (simple problems)

UNIT- IV:
Financial Accounting: Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts. (Simple Problems)
Financial Analysis through Ratios: Computation, Analysis and Interpretation of Liquidity Ratios (Current Ratio and quick ratio), Capital structure Ratios (Debt- Equity ratio, Interest Coverage ratio), Activity Ratios (Inventory turnover ratio and Debtor Turnover ratio), and Profitability ratios (Gross Profit Ratio, Net Profit ratio, Operating Ratio, P/E Ratio and EPS), (Simple Problems).

Text Books:
1. Aryasri: **"Managerial Economics and Financial Analysis",** TMH,2nd edition, 2005.
2. SA Siddiqui and AS Siddiqui **"Managerial Economics and Financial Analysis"**, New age international publishers.
3. Varshney & Maheswari: **"Managerial Economics"**, Sultan Chand, 2003.

Codes/Tables: Present Value Tables need to be permitted into the examination Hall.
Reference Books:
1. Raghunatha Reddy & Narasimhachary: **"Managerial Economics& Financial Analysis"**, Scitech,2009
2. V. Rajasekaran & R. Lalitha,**" Financial Accounting"**, Pearson Education, New Delhi,2010.
3. Suma Damodaran, **"Managerial Economics"**, Oxford University Press.
4. Domnick Salvatore: **"Managerial Economics In a Global Economy"**, Thomson, 4th Edition.
5. Subash Sharma & M.P. Vittal, "**Financial Accounting for management**", **Text & Cases**, Machmillan 2008
6. S.N.Maheswari & S.K. Maheswari,**" Financial Accounting"**, Vikas,2008
7. Truet and Truet: **"Managerial Economics:Analysis", Problems and Cases**, Wiley,2009
8. Dwivedi:**"Managerial Economics"**, Vikas, 6th Edition,2009

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(13EC401) ELECTRICAL TECHNOLOGY

Objectives: To equip the students with fundamental knowledge of electrical engineering by covering the important concepts of basic electrical circuits (DC & AC), electrical machines viz transformers generators and motors. To analyze the transient behavior of first & second order electric circuits, design & analyze the two port network parameters, filters and attenuators. To know the design & working principles of D.C generators, D.C motors, and Transformers.

UNIT-I:

Transient Analysis (First and second order circuits): Transient Response of RL, RC series and RLC Circuits for DC excitations, initial conditions, solutions Using Differential Equations approach and Laplace Transform Method.

Two Port Networks: Impedance parameters, Admittance parameters, Hybrid parameters, Transmission (ABCD) parameters, Conversion of one parameter to another, conditions for Reciprocity and Symmetry, Interconnection of two port networks in series, parallel and cascade configurations. Illustrative problems

UNIT-II:

Filters: Classification of Filters, filter Networks, Classification of pass Band and stop Band, Constant-k Low pass filter ,High pass filter, Band pass filter and Band Elimination filter. Illustrative problems.

Symmetrical Attenuators: Symmetrical Attenuators- T-type Attenuator, π-type Attenuator, Bridged T-type Attenuator, Lattice Attenuator

UNIT-III:

DC Machines

DC Generators: Principle of operation of DC Machines ,EMF equation, Types of generators, Magnetization and Load characteristics of DC Generators.

DC Motors: Types of DC Motors, Characteristics of DC Motors, Losses and Efficiency, Swinburne`s Test,Speed control of DC shunt motor, Flux and Armature Voltage Control Methods.

UNIT-IV:

Transformers and Their Performance: Principle of Operation of Single Phase transformer ,Types, Constructional Features ,Phasor Diagram on No Load and Load, Equivalent Circuit, Losses and Efficiency of Transformer and Regulation, OC and SC Tests, Predetermination of Efficiency and Regulation(Simple Problems)

Induction Motors:Types & Constructional details,Rotating Magnetic Field,Principle of operation, Frequency of rotor currents,Slip - Torque Characteristics.

Text Books:

1. W.H.Hayt, J.E.Kimmerly, and S.M.Durbin "Engineering circuit analysis" McGraw Hill Company , 6th Edition, 2008.
2. A.Sudhakar, Shyammohan S.pilli "Network Analysis" TMH, 3rd Edition, 2009.
3. M.S.Naidu and S.Kamakshaiah "Basic Electrical Engineering" TMH,3rd Edition, 2009.

Reference Books:

1. John.D.Ryder "Networks, Lines and Fields" PHI , 2rd Edition, 2008,.
2. C.L Wadhwa "Network Analysis and Synthesis" New Age International Publishers. 3rd Edition, 2007.
3. N.C.Jagan and C.Lakshmi Narayana "Network Analysis" BSP, 3rd edition, 2006.
4. C. K. Alexander and M. N. O. Sadiku, "Fundamentals of Electric Circuits" Tata McGraw-Hill, 2nd edition, 2008.

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	3	**1**	**0**	**[3]**

(13EC402) ELECTROMAGNETIC THEORY AND TRANSMISSION LINES

Objectives: The main objectives of the course are to:

- Acquire the prerequisites of the electro-magnetic fields and their interaction with materials
- Understand the applications of Coulomb's law and Gauss law to different charge distributions
- Know the physical interpretation of Maxwell' equations and applications for various fields like Antennas, Waveguides
- Understand behavior of E.M. waves incident on the interface between two different media
- Acquire knowledge of Poynting Theorem and its application of Power flow
- Understand the significance of Transmission lines and their different parameters.

UNIT- I:

Electrostatics-I: Coulomb's Law, Electric Field Intensity - Fields due to Different Charge Distributions, Electric Flux Density, Gauss Law and Applications, Electric Potential, Relations Between E and V, Maxwell's Two Equations for Electrostatic Fields, Energy Density, Illustrative Problems.

Electrostatics-II: Convection and Conduction Currents, Dielectric Constant, Isotropic and Homogeneous Dielectrics, Continuity Equation, Relaxation Time, Poisson's and Laplace's Equations, Capacitance - Parallel Plate, Coaxial, Spherical Capacitors, Illustrative Problems.

UNIT- II:

Magnetostatics: Biot - Savart Law, Ampere's Circuital Law and Applications, Magnetic Flux Density, Maxwell's Two Equations for Magnetostatic Fields, Magnetic Scalar and Vector Potentials, Forces due to Magnetic Fields, Ampere's Force Law, Inductances and Magnetic Energy, Illustrative problems.

Maxwells Equations (Time Varying Fields): Faraday's Law and Transformer EMF, Inconsistency of Ampere's Law and Displacement Current Density, Maxwell's Equations in Different Final Forms and Word Statements. Conditions at a Boundary Surface: Dielectric- Dielectric and Dielectric - Conductor Interfaces, Illustrative Problems.

UNIT- III:

EM Wave Characteristics-I: Wave Equations for Conducting and Perfect Dielectric Media, Uniform Plane Waves – Definition, All Relations between E & H, Sinusoidal Variations, Wave Propagation in Lossless and Conducting Media, Conductors & Dielectrics – Characterization, Wave Propagation in Good Conductors and Good Dielectrics, Polarization, Illustrative Problems.

EM Wave Characteristics-II: Reflection and Refraction of Plane Waves - Normal and Oblique Incidences, for both Perfect Conductor and Perfect Dielectrics, Brewster Angle, Critical Angle and Total Internal Reflection, Surface Impedance, Poynting Vector and Poynting Theorem – Applications, Power Loss in a Plane Conductor, Illustrative Problems.

UNIT IV

Transmission Lines-I: Types, Parameters, Transmission Line Equations, Primary & Secondary Constants, Expressions for Characteristic Impedance, Propagation Constant, Phase and Group Velocities, Infinite Line Concepts, Lossless / Low Loss Characterization, Distortion - Condition for Distortion less and Minimum Attenuation, Loading – Types of Loading, Illustrative Problems.

Transmission Lines-II: Input Impedance Relations, SC and OC Lines, Reflection Coefficient, VSWR, UHF Significance of Z_{min} and $Z_{max,}$ Smith Chart - Configuration and Applications, Single and Double Stub Matching, Illustrative problems.

Text books:

1. Mathew N.O. Sadiku , Elements of Electromagnetics, Oxford Univ.Press, 4th edition 2007.
2. William H. Hayt Jr. and John A. Buck, Engineering Electromagnetic s, TMH, 7th edition 2009.
3. John D. Ryder , Networks, Lines and Fields, PHI, 2nd edition, 2000.
4. "Electromagnetics", Schaum's Outline Series, 3rd edition,2011.

Reference Books:

1. E.C. Jordan and K.G. Balmain, Electromagnetic Waves and Radiating Systems , PHI, 2nd edition 2002.
2. K.D. Prasad , Antenna & Wave Propagation, Tech India Publishers, 1st edition, 2001.

II B.Tech II Semester (ECE)	**L**	**T**	**P**	**[C]**
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(13EC403) SWITCHING THEORY AND LOGIC DESIGN

Objectives: Students undergoing this course are expected to:

- Understand the different number system, its conversions and binary arithmetic.
- Know the fundamentals of Boolean algebra and theorems, Karnaugh maps including the minimization of logic functions to SOP or POS form.
- understand the logic design of programmable devices, including PLDs
- understand RAMS, and ROMS including its sequencing and control

UNIT- I:

Digital Codes and Boolean Algebraic Switching Functions:

Types of number systems – complement representation of Negative numbers, Implementation of simple arithmetic operations and conversions using Binary, BCD, OCTAL and Hexa-Decimal Numbers. Error Detecting & Error Correcting codes- Hamming codes. Fundamental postulates of Boolean Algebra, Basic theorems and properties, Switching Functions, Canonical and Standard forms, Algebraic simplification Digital Logic Gates, Universal Gates.

UNIT- II:

Minimization of Switching Functions and Combinational Logic Design:

Map Method:- Prime Implicants, Don't care combinations, Minimal SOP and POS forms, Tabular Method, Prime- Implicant chart, Simplification Rules. Design using conventional Logic Gates, Encoder, Decoder, Multiplexer, De-Multiplexer, Introduction to Modular design using IC chips, MUX Realization of switching functions Parity bit generator, Code- converters, Hazards and hazard free realizations.

UNIT- III:

Programmable Logic Devices and Sequential Circuits:

Basic PLD's:-ROM, PROM, PAL, PLA. Realization of Switching functions using PLD's. Capabilities and limitations of Threshold gate. Classification of sequential circuits: (Synchronous, Asynchronous, Pulse mode, Level mode with examples) Basic Flip-Flops, Triggering and Excitation Tables. Steps in Synchronous Sequential Circuit Design. Design of modulo -N Ring & Shift counters, Serial Binary Adder, Sequence Detector and Memory (Register level: Serial and Parallel).

UNIT- IV:

State Machines: FSMs AND ASMs

Finite State Machine – capabilities and Limitations, Mealy and Moore models, Examples of Mealy and Moore models, Partition Techniques and Merger chart Methods Concept of Minimal cover table.

Algorithmic State Machines:-Salient features of the ASM chart, Simple examples, System design using data path and control subsystems, control Implementations, Examples of Weighing machine and Binary multiplier.

Text Books:

1. Zvi Kohavi, Switching & Finite Automata theory, TMH, 2 Edition,1979.
2. Morris Mano, Digital Design, PHI, 3rd Edition. 2008.
3. A.Anand Kumar, Switching Theory and Logic Design, PHI, 1st edition, 2011.

Reference Books:

1. Fletcher, An Engineering Approach to Digital Design, PHI. 1st edition 2001.
2. Charles H. Roth, Fundamentals of logic design, Thomson Publicaitons, 5th Edition 2006.

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(13EC404) ANALOG CIRCUIT ANALYSIS

Objectives: Students undergoing this course are expected to:

- Analyse Single stage amplifier at low and High frequencies using BJT and FETs.
- Analyse Multi stage amplifiers at low and High frequencies using BJT and FETs.
- Analyze single stage and multi stage amplifiers and to enable the students to realize the impact of cascading or coupling during the system level integration.
- Recognize the importance of feedback in amplifiers.
- Know how the negative feedback provides better stability with less distortion.
- Understand the principle, operation and design of oscillators.
- Comprehend the use of Power amplifiers and Tuned amplifiers in real time applications.

UNIT – I:

Small Signal Amplifiers:

Common emitter amplifier with emitter resistance, Emitter follower, FET small signal model, Low frequency common source and common drain amplifiers, FET as Voltage Variable Resistor, Cascading

Transistor Amplifiers, High input Resistance Transistor Circuits – Darlington pair, Cascode amplifier, Frequency response and analysis of RC Coupling, Direct coupling and Transformer coupling, Difference amplifier, Two Stage RC Coupled JFET amplifiers (in Common Source (CS) configuration). Transistor at High Frequencies, Hybrid- π Common Emitter transistor model, Hybrid- π conductances, Hybrid π capacitances, Validity of hybrid π model, Variation of Hybrid Parameters, CE short circuit gain, Current gain with resistive load, Single stage CE transistor amplifier response, Gain Bandwidth product, Emitter follower at High frequencies.

UNIT – II:

Large Signal Amplifiers:

Classification of amplifiers, Class A large signal amplifiers, second harmonic distortion, higher order harmonic distortion, transformer-coupled class A audio power amplifier – efficiency of Class A amplifiers. Class B amplifier – efficiency – push pull amplifier - distortion in amplifiers - complementary-symmetry (Class B) push-pull amplifier, Class C, Class D amplifier – Class S amplifier – MOSFET power amplifier, Thermal stability and heat sink.

UNIT – III:

Feedback Amplifiers:

Block diagram, Loop gain, Gain with feedback, Effects of negative feedback – Sensitivity and desensitivity of gain, Cut-off frequencies, distortion, noise, input impedance and output impedance with feedback, Four types of negative feedback connections – voltage series feedback, voltage shunt feedback, current series feedback and current shunt feedback, Method of identifying feedback topology and feedback factor, Nyquist criterion for stability of feedback amplifiers.

UNIT – IV:

Oscillators:

Classification, Barkhausen Criterion - Mechanism for start of oscillation and stabilization of amplitude, General form of an Oscillator, Analysis of LC oscillators -Hartley, Colpitts, Clapp, Armstrong, Tuned collector oscillators, RC oscillators -phase shift – Wienbridge.

Tuned Amplifiers and Voltage Regulators:

Introduction, Q-Factor, Small Signal Tuned Amplifier – Capacitance single tuned amplifier, Double Tuned Amplifiers, Effect of Cascading Single tuned amplifiers on Band width, Effect of Cascading Double tuned amplifiers on Band width, Staggered tuned amplifiers, Stability of tuned amplifiers, Voltage regulation – Line Regulation, Load Regulation, Types of Regulators, Series voltage regulator , shunt regulators, Overload Voltage protection.

Text Books:

1. Jacob Millman, Christos C Halkias & Satyabratajit , Electronic Devices and Circuits, TMH, 2nd edition 2007**.**
2. Robert L Boylested and Louis Nashelsky, Electronic Devices and Circuit Theory, Pearson India, 10th Edition,2009.
3. David A Bell , Electronic Devices and Circuits, Oxford, 5th edition, 2008.

Reference Books:

1. NN Bhargava, DC Kulshrestha and SC Gupta, Basic Electronics and Linear Circuits, TMH, 2nd edition, 2009.
2. Jacob Millman and Arvin Grabel, Microelectronics, Tata McGraw Hill, 2nd edition, 2007.

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(13EC405) PULSE AND DIGITAL CIRCUITS

Objectives: The students completing this course are expected to demonstrate basic knowledge of Pulse and Digital Circuits by understanding:

- Differentiator and Integrator circuits, clippers(limiters)
- clampers (dc-reinserted), comparators(discriminators)
- Switching characteristics of diodes and transistors
- Astable multi(square wave generator)
- Monostable multi(one shot)
- Bistable multi(flip-flop), Schmitt trigger circuit
- Time Base generators(Miller, Bootstrap Voltage time base generator and Current time base generator)
- Synchronization and Frequency division(Synchronization using Astable, Monostable relaxation circuits)
- Sampling Gates (Unidirectional, Bidirectional sampling gates without pedestal and Applications of sampling gates) and Realization of Logic gates using Diodes and Transistors.

UNIT-I:
Introduction to elementary signals and representations, RC circuits, types
Linear Wave Shaping:
The Highpass RC Circuit, The Highpass RC Circuit: Exponential & Ramp Inputs, The Highpass RC Circuit as a Diffentiator, Low pass RC Circuit, The Low pass RC Circuit (Exponential & Ramp Inputs), The Low Pass RC Circuit as a Integrator, Attenuators.
Non-Linear Wave Shaping:
Clipping Circuits, Diode Clippers, Clipping at Two Independent Levels, The Clamping Operation, Clamping Circuits Taking Source and Diode Resistances into Account, A Clamping Circuit Theorem and Practical Clamping Circuits.

UNIT-II:
Multivibrators:
Bistable Multivibrator**:** The Stable States of a Bistable Multivibrator, A Fixed Bias Transistor Bistable Multivibrator, Self Bias Transistor Bistable Multivibrator, Commutating Capacitors, Methods of Improving Resolution, Unsymmetrical Triggering of the Bistable Multivibrator. Triggering Unsymmerically through a Unilateral Device, Symmetrical Triggering and Schmitt Trigger.
Monostable And Astable Multivibrators**:** The Monostable Multivibrators, Gate Width of a Collector Coupled Monostable Multivibrator, Waveforms of The Collector Coupled Monostable Multivibrators, The Astable Collector Coupled Multivibrator**.**

UNIT-III:
Time Base Generators:
Voltage Time Base Generators: General Features of a Time Base Signal, Methods of Generating a Time Base Waveform, Exponential Sweep Circuit, Negative Resistance Switches, Sweep Circuit Using a Transistor Switch, A Transistor Constant Current Sweep, Miller and Boot Strap Time Base

Generators-General Considerations, The Transistor Miller Time Base Generator, The Transistor Boot Strap Time Base Generator.
Current Time Base Generators: A Simple Current Sweep, Linearity Correction through Adjustment of Driving Waveform, A Transistor Current Time Base Generator. Blocking Oscillators: A Triggered Transistor Blocking Oscillator (Base Timing), A Triggered Transistor Blocking Oscillator (Emitter Timing).

UNIT-IV:
Sampling Gates: basic operating principle, types & applications of S.G, synchronization and frequency division applications.
Logic Gates and Applications: OR, AND, NOT, NAND, NOR, EX-OR and EX-NOR gates, RTL, DTL,TTL and CMOS logic families

Text books:
1. J.Millman, H.Taub, Pulse, Digital and Switching Wave forms, TMH publishers,1st edition, 2001.
2. A.Anand Kumar, Pulse and Digital Circuits, PHI Publishers 2nd edition, 2008.
3. David A.Bell , Solid State Pulse Circuits, PHI, 4th edition, 2006.

Reference books:
1. L. strauss, Wave Generation and shaping , McGraw-Hill,1970.
2. Jacob Millman,Christos C.Halkis, Integrated Electronics, TMH, 2nd edition, 2009.
3. "Pulse circuits", Michale
4. Ronald J.Tocci, Fundamentals of pulse and digital circuits, 3 rd edition 2008
5. John f. Wakerly, Digital design principles and practices, Pearson publishers,3rd edition 2011.

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(13EC406) ELECTRICAL ENGINEERING LAB

Objectives:

List of Experiments:

PART-A
1. Verification of KVL and KCL
2. Verification of Thevenin`s Equivalent circuit and Norton`s Equivalent circuit by direct Test
3. Verification of Superposition and Reciprocity theorems
4. Verification of Tellegen`s and millmann's theorems
5. Verification of Maximum power transfer theorem. Verification on DC, Verification on AC With Resistive loads
6. Verification of Compensation theorem.
7. Two Port Network parameters- Z and Y parameters
8. Two Port Network parameters- ABCD and h-parameters

PART –B

1. Swinburne`s Test on DC Shunt machine (Predetermination of efficiency of a given DC shunt machine working as motor and generator)
2. Brake Test on DC Shunt Motor. Determination of performance characteristics.
3. Magnetization characteristics of DC Shunt Generator. Determination of critical Resistance
4. OC and SC Test on single phase Transformer (Predetermination of efficiency and regulation at given power factors and determination of Equivalent circuit.
5. Load Test on single phase Transformer.
6. Speed control of DC shunt motor.
7. Load Test on DC Shunt generator. Determination of characteristics.
8. Load Test on DC Series generator. Determination of characteristics

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(13EC407) ANALOG CIRCUIT ANALYSIS LAB

Objectives: This course is intended to

- Conduct experiment on Common Emitter and Common Source amplifiers.
- Accomplish the frequency response of two stage RC coupled amplifier.
- Construct negative feedback in amplifiers.
- Construct sinusoidal oscillators.
- Construct power amplifiers.

List of Experiments (Twelve experiments to be done):

Testing in the Hardware Laboratory:

1. Common Emitter amplifier,
2. Common Base Amplifier
3. Common Source Amplifier
4. Common Drain Amplifier
5. Two Stage RC Coupled Amplifier
6. Current shunt Feedback Amplifier
7. Voltage Feedback Amplifier
8. Wien Bridge Oscillator using Transistors
9. RC Phase Shift Oscillator using Transistors
10. Hartley and Colpitts Oscillator using Transistors
11. Class A Power Amplifier (Transformer less)
12. Class B Complementary Symmetry Amplifier

II B.Tech II Semester (ECE)	L	T	P	[C]
	0	0	3	[2]

(13EC408) CIRCUIT SIMULATION LAB

Objectives: This course is intended to simulate and

- Conduct experiment on Common Emitter and Common Source amplifiers.
- Accomplish the frequency response of two stage RC coupled amplifier.
- Construct negative feedback in amplifiers.
- Construct sinusoidal oscillators.
- Construct power amplifiers.

List of Experiments (Twelve experiments to be done):

I) Design and Simulation in Simulation Laboratory using Multisim or Pspice or Equivalent Simulation Software.

1. Common Emitter amplifier.
2. Common Base Amplifier.
3. Common Source Amplifier.
4. Common Drain Amplifier.
5. Two Stage RC Coupled Amplifiers.
6. Current shunt Feedback Amplifier.
7. Voltage Feedback Amplifier.
8. Wien Bridge Oscillator using Transistors.
9. RC Phase Shift Oscillator using Transistors.
10. Hartley and Colpitts Oscillator using Transistors.
11. Class A Power Amplifier (Transformer less).
12. Class B Complementary Symmetry Amplifier

II B.Tech II Semester (ECE)	L	T	P	[C]
	0	1	0	[2]

(13EC409) TECHNICAL SEMINAR-I

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

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

Electrical & Electronics Engineering

II B.Tech I Semester (EEE)	L	T	P	[C]
	3	1	0	[3]

(13HS114) ENGINEERING MATHEMATICS-III

Objectives: The Subject is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many engineering fields.

UNIT – I:
Special Functions: Gamma and Beta functions – their properties – Evaluation of Improper integrals. Bessel functions – properties – Recurrence relations – orthogonal. Legendre polynomials – Properties – Rodrigue's formula – Recurrence Relations – Orthogonality

UNIT-II:
Functions of a Complex Variable: Continuity – Differentiability – Analyticity – Properties – Cauchy – Riemann Equations in Cartesian and polar co-ordinates. Harmonic and Conjugate Harmonic function – Milne – Thomson method – Elementary functions – Exponential, trigonometric, Hyperbolic functions and their properties – General power z^c(c is complex), principal value.
Conformal Mapping: Transformation by e^z, 1nz, z^2, sinz, cos z, Bilinear transformation – Translation, rotation, magnification and inversion – Fixed point – cross ratio – Determination of bilinear Transformation mapping three given points.

UNIT - III:
Complex Integration: Line Integral – Evaluation along a path and by Indefinite Integration – Cauchy's Integral theorem – Cauchy's integral formula – General Integral formula.
Complex power series: Radius of convergence – Expansion in Taylors Series – Maclaurin's Series and Laurent Series. Singular point – Isolated singular point – pole of order 'm' – Essential singularity.

UNIT – IV
The Calculus of Residue – Evaluation of residue by formula and by Laurent series – Residue theorem – Evaluation of integrals of the type.

(e) Improper real integral $\int_{-\alpha}^{\alpha} f(x)dx$.

(f) $\int_{0}^{2\pi} f(\cos\theta, \sin\theta)d\theta$.

(g) $\int_{-\alpha}^{\alpha} e^{imx} f(x)dx$.

(h) Integrals by indentation

Argument Principle – Rouche's theorem – determination of number of zeros of complex polynomials – maximum modulus principle – Fundamental theorem of Algebra, Liouville's Theorem.

Text Books:

1. T.K.V. Iyengar, B. Krishna Gandhi and Others ,A Text Book of Engineering Mathematics, Vol – III, , S. Chand & Company.
2. E. Rukmangadachari and E. Keshava Reddy ,A Text Book of Engineering Mathematics-III, , Pearson Education.

Reference Books:

1. B.S.Grewal ,Higher Engineering Mathematics, 42 Edition(2012), Khanna publishers .
2. C. Sankaraiah ,A Text Book of Engineering Mathematics, , V.G.S. Book Links.
3. B.V.Ramana ,Higher Engineering Mathematics, Mc Graw Hill publishers(2008)
4. Chruchile and Brown -Complex variables
5. Schaum series -Complex variables

II B.Tech I Semester (EEE)	**L**	**T**	**P**	**[C]**
	2	**0**	**0**	**[2]**

(13HS120) PROFESSIONAL ETHICS AND HUMAN VALUES

Objectives:

- To create an awareness on Engineering Ethics and Human Values
- To instill Moral and Social Values and Loyalty
- To appreciate the rights of others.

UNIT-I:

Human Values: Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality

UNIT-II:

Engineering Ethics: Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT-III:

Engineering as Social Experimentation: Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

UNIT-IV:

Safety, Responsibilities and Rights: Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies.
Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

Text Books:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

Reference Books:

1. Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.

II B.Tech I Semester (EEE)	**L**	**T**	**P**	**[C]**
	3	**0**	**0**	**[3]**

(13EE301) FLUID MECHANICS AND HYDRAULIC MACHINERY

Objectives: This course gives an introduction to the fundamentals of fluid flow and its behavior so as to equip the students to learn related subjects and its application in the day to day life in a very effective manner

UNIT- I:

Introduction: Dimensions and units – physical properties of fluids, specific gravity, viscosity, surface tension and capillarity, vapor pressure and their influences on fluid motion. Newtonian and non Newtonian fluids. Fluid Pressure at a Point; Pascal's law, Hydrostatic law, Atmospheric, Absolute and gauge pressure; Hydrostatic paradox, Pressure measurement manometers; Simple, differential and Micro Manometers

Kinematics of Fluid Motion: Methods of describing fluid motion; Classification of flow; Steady, unsteady, uniform and non-uniform flows; Laminar and turbulent flows; Three, two and one dimensional flows; Irrotational and rotational flows; Streamline; Pathline; Streakline; Equation for acceleration; Convective accelaration; Local acceleration; Continuity equation; Velocity potential and stream function.

UNIT – II:

Dynamics of Fluid Flow: Forces acting on a Fluid in Motion; Euler's equation of motion; Bernoulli's equation ; Energy correction factor; Momentum principle; Force exerted on a pipe bend. Discharge through Venturi Meter; Discharge through Orifice Meter; Discharge through flow nozzle; Measurement of velocity by Pitot tube,pitot-static tube.

Closed Conduct Flow: Energy losses in pipelines; Darcy – Weisbach equation; Minor losses in pipelines; Hydraulic Grade Line and Total Energy Line; Concept of equivalent length; Hydraulic power transmission through a pipe; Siphon; Pipes in series, parallel & branched pipes.

UNIT – III:

Basics of Turbo Machinery: Hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes, jet striking centrally and at tip, velocity triangles at inlet and outlet, expressions for work done and efficiency-Angular momentum principle, Torque and head transferred in roto dynamic machines.

Hydraulic Turbines-I: Introduction, head and efficiencies of hydraulic turbines, Classification of turbines; pelton wheel: parts, Velocity triangles, work done and efficiency, working proportions, design of pelton wheel. Radial flow reaction turbines: velocity triangles and work done for inward radial flow turbine, degree of reaction, discharge, speed ratio, flow ratio.

UNIT – IV:

Hydraulic Turbines-II: Francis turbine: main components and working, work done and efficiencies, design proportions; design of francis turbine runner. Kaplan turbine: main components and working, working proportions. Draft tube: theory and efficiency; specific speed, unit quantities, characteristic curves of hydraulic turbines. Cavitation: causes, effects.

Centrifugal Pumps: Introduction, component parts and working of a centrifugal pump, work done by the impeller; heads, losses and efficiencies; minimum starting speed; Priming ;specific speed; limitation of suction lift, net positive suction head(NPSH);Performance and characteristic curves; Cavitation effects ;Multistage centrifugal pumps; troubles and remedies.

Text Books:

1. Hydraulics & Fluid Mechanics by P. N. Modi & S. N. Seth; Standard Book house, New Delhi
2. Fluid Mechanics & Hydraulic Machines by Dr. R. K. Bansal; Laxmi Publications, New Delhi.

Reference Books:

1. Hydraulic Machines by Jagdish Lal, Metropolitan.
2. A. K. Jain; Fluid Mechanics, Khanna Publishers, Delhi
3. Rajput, Fluid mechanics and fluid machines, S.Chand &Co.
4. D.S. Kumar Kataria, Fluid Mechanics & Fluid Power Engineering ,Publishers: D.S. Kumar Kataria&Sons.
5. K R Arora, Fluid Mechanics, Hydraulics and Hydraulic Machines ,Standard Publishers
6. Kumar K.L., Engineering Fluid Mechanics , Eurasia Publishing House (P) Ltd., New Delhi

II B.Tech I Semester (EEE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13EE302) ELECTRONIC DEVICES AND CIRCUITS

Objectives: Students undergoing this course are expected to:

- Know the formation and properties of semiconductor materials & Understand the operation of diode
- Understand various types of rectifiers and Understand the importance of regulators
- Explain the operation of transistor and Know the need for biasing of transistor
- Explain the operation of transistor as amplifier.

UNIT- I:

Semiconductor Physics &P-N Junction Diode: Semiconductor Materials ,Intrinsic & Extrinsic Materials ,Doping Concentrations ,Continuity equation, Drift &diffusion velocity ,Hall effect, P-N junction

Manufacturing types, diode equation, V-I characteristics ,Temperature dependence, Static & Dynamic resistance, Diode equivalent Circuit, Break down mechanism, Zener diode and its characteristic. Study of Photo Diode, Varactor diode, and Schottky diode

UNIT- II:

Rectifiers and Filters: P-N junction as rectifier ,Half wave ,Full wave (center tap, Bridge)rectifiers, Average current, RMS current, Rectifiers efficiency, Ripple factor ,Form Factor, Percentage of regulation, Peak inverse voltage, Problems on rectifiers.

Filters: Capacitor, Inductor Filters-section filter, π-Section filter, Problems on filters, Zener diode as voltage regulator

UNIT- III:

BJT, Transistor Biasing & Stabilization:

Transistor construction, Operation and Configurations, V-I Characteristics, Relation between Transistor Parameters(α,β,γ),Comparison between BJT Configurations ,Analysis of Q-points and Load Lines(AC,DC), Need for Biasing, Types of Biasing Techniques and their stabilization factors (I_{CEO},V_{BE}, β &S) , Thermal runaway ,Problems on Biasing , BJT as Switch and Amplifier

UNIT- IV:

Field Effect Transistor: Introduction to FET, Types of FETs, Construction, Operations and Characteristics of JFET and MOSFET, FET Configurations, Comparison of JFET &MOSFET, Comparision between BJT and FET. Biasing of JFET and MOSFET, Problems on biasing. Principal of operation and Characteristics of UJT.

Text Books:

1. Jacob Millman, Christos C Halkias & Satyabratajit, Electronic Devices and Circuits, 2nd ed., TMH,2008.
2. Robert L Boylested and Louis Nashelsky, Electronic Devices and Circuit Theory, 9th ed., Pearson India, 2007.

Reference Books:

3. NN Bhargava, DC Kulshrestha and SC Gupta , Basic Electronics and Linear Circuits, 1st ed., TMH, 2003.
4. Millman and Grabel , Microelectronics, 2nd ed., Tata McGraw Hill**,** 1988.

II B.Tech I Semester (EEE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13EE303) CIRCUIT THEORY-I

Objectives: Circuit Theory is the foundation for all the subjects of Electrical Engineering discipline. The emphasis of this course is laid on the basic concepts & analysis of DC circuits, Single phase AC circuits, network theorems, magnetically coupled circuits and graph theory.

UNIT – I:

Introduction to Electrical Circuits: *Circuit Concept – R-L-C parameters – Voltage and Current sources – Independent and dependent sources- Source transformation – Voltage – Current relationship for passive elements (for different input signals-square, ramp, saw tooth, triangular).*

Magnetic Circuits: Magnetic Circuits – Faraday's laws of electromagnetic induction – concept of self and mutual inductance – dot convention – coefficient of coupling – Analysis of series and parallel magnetic circuits.

UNIT – II:

Network Analysis: Kirchhoff's laws – network reduction techniques – series, parallel, series-parallel. Star-to-delta and delta-to-star transformation. Nodal Analysis, mesh analysis, super node and super mesh for D.C excitations.

Single Phase A.C Circuits: *R.M.S and Average values and form factor for different periodic wave forms- sinusoidal, square, ramp, saw tooth etc., Phase and phase difference- Complex and Polar forms of representation - J-notation –Steady-state analysis of R, L and C (in series, parallel and series-parallel combinations) with sinusoidal excitation. Concepts of Reactance, Impedance, Susceptance, Admittance, power factor, Apparent, Real & Reactive power, Complex power. Phasor diagrams and analysis.*

UNIT – III:

Network theorems I: Superposition, Thevenin's, Norton's and Reciprocity theorems. Analysis with D.C. & sinusoidal excitations.

Network theorems II: compensation, maximum power transfer, Tellegen's , millman's theorems. Analysis with D.C. & sinusoidal excitations.

UNIT – IV:

Locus diagrams & Resonance: Locus diagrams – series R-L, R-C, R-L-C combination with variation of R, L & C parameters. Resonance – series, parallel circuits, concept of band width and Q-factor.

Network topology: *Definition & Concepts: Graph – Tree, Basic cutset and Basic Tieset matrices for planar networks – Loop and Nodal methods of analysis of Networks with dependent and independent voltage and current sources - Duality & Dual networks.*

Text Books:

3. W.H.Hayt, J.E.Kimmerly, and S.M.Durbin "Engineering circuit analysis" McGraw Hill Education private limited, 6th Edition, 2002.
4. M.E Van Valkenburg, "Network Analysis" Prentice Hall of India, 3rd Edition, 2000.

Reference Books:

7. C. K. Alexander and M. N. O. Sadiku, "Fundamentals of Electric Circuits" Tata McGraw-Hill, 2nd edition, 2004.
8. Mahmood Nahvi, Joseph Edminister, "Electric Circuits" Schuam Series, 5th edition, 2011.
9. Chakrabati A, "Circuit Theory (Analysis and Synthesis)" Dhanpath Rai & Sons, 6th edition, 2004.

10. Mahmood Nahvi and Joselph Edminister, “Electric Circuits” Schaum’s Outline series TMH, 2004.
11. Ravish R Singh, “Electrical Networks” Tata McGraw-Hill Publication, 6th edition, 2010.
12. A. Sudhakar and Shyammohan S Palli, “Circuits & Networks” Tata McGraw-Hill, 4th edition, 2010.

II B.Tech I Semester (EEE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13EE304) D C MACHINES

Objectives: Electrical Machines is a subject where a student will deal with various types of electrical machines which find extensive applications in industry, power stations, domestic, commercial etc fields. As electrical machines are largely energy converting equipment, the objective of this subject is to provide the understanding of the basic principles involved in the electro-mechanical energy conversion principles and operation. The student acquires thorough knowledge of details of construction, operation and applications of DC machines. Students also learn practical aspects of DC machines and be able to analyze the performance under different conditions. Appropriate tests conducted will make the students understand better.

UNIT – I:

Electromechanical Energy Conversion Principles: Principle of Energy Conversion-Single excited magnetic systems- Expression for electrical energy input, energy stored in magnetic field, mechanical work done and the mechanical force developed-numerical problems. Doubly excited magnetic systems - Expression for magnetic torque.

DC Generators-Construction and Operation: DC Generators – working principle- Faraday’s laws-constructional features, action of Commutator, armature windings-lap and wave windings, Use of laminated armature, EMF Equation- Numerical problems.

UNIT-II:

Armature Reaction in DC Generators: Armature reaction – Cross magnetizing and de-magnetizing AT/Pole, compensating winding, dummy coils, Commutation-reactance voltage-methods of improving commutation.

Classification of DC Generators: Methods of Excitation – Separate Excitation, Self excitation, conditions for building-up of EMF- critical field resistance and critical speed-problems, causes for failure to self excitation and remedial measures.

UNIT-III:

Operating Characteristics of DC Generators: Operating characteristics of separately excited, self excited generators-Shunt, Series and Compound-problems, parallel operation of DC Shunt generators-load sharing, applications.

DC Motors: DC motors-Principle of operation-importance of back emf, torque equation-Armature & Shaft torques-expressions, operating characteristics and applications of shunt, series and compound motors-Armature reaction and commutation.

UNIT-IV:

Starting and Speed Control of DC Motors: DC motor starters -function of a starter- construction-starting resistance-no load coil- over load release. Operation of 2- point, 3-point and 4- point starters. Speed equation of a dc motor- speed control methods for dc motors-Armature voltage and field flux control, Ward-Leonard system -Problems.

Losses, Efficiency and Testing of DC Machines: Losses-constant and variable types and their effect-calculation of efficiency, condition for maximum efficiency, methods of testing- Swinburne's test, Brake test, Hopkinson's test, Field test, Retardation test and separation of losses.

Text Books:

1. Dr.P.S.Bhimbra, "Electric Machinery", Khanna Publishers, 7th edition, 2006.
2. J.B.Gupta, "Theory and performance of Electrical Machines", Khanna Publishers, 14th edition, 2010.

Reference Books:

1. Charles I. Hubert."Electric Machines: Theory, Operating Applications, and Controls", Pearson publication, 2nd edition, June 2002.
2. A.E.Fitzerald, C.kingsley and S.Umans,"Electrical Machinery", Tata Mc Graw-Hill companies, New Delhi, 6th edition, 2008.
3. Samarjit Singh, "Electrical Machines", Pearson education, 2012.
4. R.K.Rajput,"A Text book of Electrical Machines", Lakshmi Publications, 2005.

II B.Tech I Semester (EEE)	**L**	**T**	**P**	**[C]**
	3	**0**	**0**	**[3]**

(13EE305) DATA STRUCTURES THROUGH C

Objectives: The objective of this course is to teach students various data structures and to explain them algorithms for performing various operations on these data structures.

The course aims are:

- Demonstrate familiarity with major algorithms and data structures.
- Analyze performance of algorithms.
- Choose the appropriate data structure and algorithm design method for a specified application.
- Determine which algorithm or data structure to use in different scenarios.
- Be familiar with writing recursive methods.

UN IT-I:

Algorithms: Definition, Properties, Performance Analysis- Space Complexity, Time Complexity, Asymptotic Notations and their Significance.

Introduction to Data structures: Elementary Data Organization, Data Structures - types, Data Structure Operations.

Arrays: Introduction, Linear Arrays, Representation of Linear Arrays in Memory, Traversing Linear Arrays, Inserting and Deleting. Multi Dimensional Arrays- two dimensional Arrays, Representation Of Two Dimensional Arrays in Memory, Pointer Arrays.

UNIT-II:

Stacks: Introduction, Stacks, Array Representation of Stacks, Evaluation of a postfix expression, Transforming Infix expression into Postfix expression, Recursion.

Queues: Introduction, Array Representation of Queues, implementation of Queue. Circular Queue – Representation and implementation, Priority Queue, Double Ended queue.

UNIT-III:
Linked Lists: Introduction, Representation of Linked List in Memory, Traversing a Linked List, Searching a Linked List, Insertion into a Linked List, and Deletion from Linked List. Header Linked Lists. Doubly Linked List, Circular Linked List. Linked Representation of Stacks, Linked Representation of Queues.
Trees: Definition, terminology. Binary Trees: Definition, properties, Complete Binary tree, Full Binary tree, Representation of Binary tree – Array based representation, Linked Representation. Common binary tree operations, binary tree traversals- Preorder, Inorder, Postorder.

UNIT-IV:
Binary Search Trees – Definitions, Searching and Insertion into Binary Search Tree, Deleting from Binary Search Tree.
Searching: Linear search, Fibonacci Search, Binary search and their time complexities, Hashing.
Sorting: definition, Internal Sorting- Bubble sort, selection sort, insertion sort, quick sort, merge sort, heap sort, radix sort and time complexities of each Technique.

Text Books:

2. Seymour lipschutz 'Theory and Problems of Data Structures' - schaum's outline sries. TMH

Reference Books:

6. Y. Langsam, M.J.Augenstein, A.M.Tenenbaum, 'Data structures using C ', Pearson Education, Second Edition, 2002.
7. E.Balaguruswamy,' C and Data Structures' TMH Publication, 2003
8. M. A. Weiss, "Data Structures and Algorithm Analysis in C", 2nd ed, Pearson Education Asia.
9. G A V Pai – Data Structures and Algorithms: Concepts, Techniques and Applications, 2nd Edn, Tata McGraw-Hill, 2008
10. J. Tremblay, P. soresan, 'An Introduction to data Structures with applications', TMH Publication, 2nd Edition, 1984.

II B.Tech I Semester (EEE)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13EE306) FLUID MECHANICS AND HYDRAULIC MACHINERY LAB

Objective: The object of the course to make the students understand the fluid flow concepts and get familiarity with flow measuring devices, turbines and pumps.

List of Experiments:
1. Venturimeter : Determination of Coefficient of discharge.
2. Orificemeter : Determination of Coefficient of discharge.
3. Determination of friction factor of Pipes.
4. Determination of loss of head in pipes due to bends, sudden contractions and sudden expansion.
5. Verification of Bernoulli's equation.

6. Impact of jet on vanes.
7. Performance test on Pelton wheel turbine.
8. Performance test on Francis turbine.
9. Performance test on kaplan turbine.
10. Performance test on single stage centrifugal pump.
11. Performance test on multi stage centrifugal pump.
12. Performance test on reciprocating pump.

II B.Tech I Semester (EEE)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13EE307) ELECTRONIC DEVICES AND CIRCUITS LAB

Objectives: This lab course is intended to
- Know the usage of electronic equipment
- Know the testing of components
- Understand the PN diode operation in forward and reverse bias
- Know the characteristics of Half and Full wave rectifier with and without filters
- Know how to connect transistor in CB,CE configurations

For Laboratory examination – Minimum of 10 experiments
- Identification and Testing of Components
- Study & Demonstration of Sourcing Instruments
- Study & Demonstration of Measuring Instruments

1. PN Junction diode characteristics A. Forward bias B. Reverse bias.
2. Zener diode characteristics
3. Transistor CB characteristics (Input and Output)
4. Transistor CE characteristics (Input and Output)
5. Half wave rectifier, Half wave rectifier with capacitor filter.
6. Full wave center tapped rectifier with and without capacitor filter.
7. FET characteristics
8. Design of self bias for CE configuration
9. Design of Zener regulator.
10. Design of series voltage regulator.
11. Design of shunt voltage regulator.
12. UJT characteristics

II B.Tech I Semester (EEE)	L	T	P	[C]
	0	0	3	[2]

(13EE308) ELECTRICAL WORKSHOP

Objectives: To provide students an opportunity to study, understand and operationalise various circuits with lamps, motors, and generators. etc. commonly used in industry. This course also provides the students hands on experience in using of various electronic components and assembling &testing of various electronic circuits.

LIST OF EXPERIMENTS:

1. Study and operationalisation of circuits with different types of lamps.
2. Study and operationalisation of fractional horse power motors with starters.
3. Design and fabrication of choke coil.
4. Study of various types of electrical installation earthing procedures.
5. Design of small Transformers.
6. Design of Industrial Hall Lightings.
7. To study repairing of home appliances such as heater, iron and fans.
8. Electronic component testing.
9. Design and fabrication of rectifiers with filters.
10. UPS wiring and testing.
11. Assembly and testing of hybrid UPS system with solar panel.
12. Fabrication of PCB.
13. Characterization of electrical cables.
14. Wiring and testing of control panel.

II B.Tech II Semester (EEE)	L	T	P	[C]
	3	1	0	[3]

(13EE401) ELECTROMAGNETIC FIELD THEORY

Objectives: The course 'electromagnetic field theory' is designed for the undergraduate students to make them understand the complex phenomena of electric fields and magnetic fields before moving on to more advanced subjects of their interest e.g. antennas and arrays, microwave engineering, radar systems, fiber and integrated optics, quantum electronics, power systems and electrical machines.

UNIT – I:

Electrostatics: Scalars and vectors, Vector Algebra, Dot product, cross product, Introduction to Cartesian, cylindrical and Spherical coordinate system, Stoke's theorem, Divergence theorem. Electrostatic Fields – Coulomb's Law – Electric Field Intensity (EFI) – EFI due to different charge distributions – Work done in moving a point charge in an electrostatic field – Electric Potential –

Properties of potential function – Potential gradient – Guass' law – Application of Guass' Law – Maxwell's first law, div (D)=ρv,

Conductors and Dipole: Laplace's and Poison's equations – Solution of Laplace's equation in one variable. Electric dipole – Dipole moment – potential and EFI due to an electric dipole – Torque on an Electric dipole in an electric field – Behavior of conductors in an electric field. Conductors and Insulators.

UNIT – II:

Dielectric & Capacitance: Electric field inside a dielectric material, polarization. Dielectric – Conductor and Dielectric – Dielectric boundary conditions. Capacitance, Capacitance of parallel plate, spherical and co- axial capacitors with composite dielectrics. Energy stored and energy density in a static electric field, Current density – conduction and Convection current densities. Ohm's law in point form .Equation of continuity

Magneto Statics: Static magnetic fields – Biot-Savart's law – Oesterd's experiment - Magnetic field intensity (MFI) – MFI due to different current distributions – Relation between magnetic flux, magnetic flux density and MFI – Maxwell's second Equation, div(B)=0.

UNIT – III:

Ampere's Circuital Law and its Applications: Ampere's circuital law and its applications viz. MFI due to an infinite sheet of current and a long straight current carrying filament – Point form of Ampere's circuital law – Maxwell's third equation, Curl (H)=Jc, Field due to a circular loop, rectangular and square loops.

Force in Magnetic Fields: Magnetic force - Moving charges in a Magnetic field – Lorentz force equation – force on a current element in a magnetic field – Force on a straight and a long current carrying conductor in a magnetic field – Force between two straight long and parallel current carrying conductors – Magnetic dipole and dipole moment – a differential current loop as a magnetic dipole – Torque on a current loop placed in a magnetic field

UNIT – IV:

Magnetic Potential: Scalar Magnetic potential and its limitations – vector magnetic potential and its properties – vector magnetic potential due to simple configurations – vector Poisson's equations. Self and Mutual inductance – Neumann's formula – determination of self-inductance of a solenoid and toroid and mutual inductance between a straight long wire and a square loop wire in the same plane – energy stored and density in a magnetic field. Introduction to permanent magnets, their characteristics and applications.

Time varying fields: Time varying fields-Faraday's laws of electro magnetic induction-its integral and point forms, maxwell's fourth equation, curl(E)= $\frac{-\partial B}{\partial t}$, statically and dynamiclly induced EMFs, displacement current, Modification of Maxwell's equations for time varying fields, poynting theorem and poynting vector.

Text Books:

1. William H. Hayt & John. A. Buck "Engineering Electromagnetics" Mc. Graw-Hill Companies, 7th Editon.2006.
2. Mathew N O Sadiku "Electro magnetic Fields" Oxford Publications, 7th edition, 2006.

Reference Books:

1. D J Griffiths "Introduction to Electro Dynamics" Prentice-Hall of India Pvt.Ltd, 2nd edition, 1999.

2. J P Tewari “Electromagnetics” Khanna publishers, 4th edition, 2009
3. J. D Kraus “Electromagnetics” Mc Graw-Hill Inc. 4th edition 1992
4. S. Kamakshaiah “Electromagnetic fields” Right Publishers, 2007
5. David K. Chang, " Field and Wave Electromagnetics ", Addison Wesley, Second edition, New Delhi,2001.
6. C. A. Balanis, J. Wiley and Sons “Advanced Engineering Electromagnetics” 2nd Edition, 1989.
7. J. D. Jackson, J. Wiley and Sons “Classical Electrodynamics” 2nd Edition, 1975.
8. Jin Au Kong, J. Wiley and Sons “Electromagnetic Wave Thoery” 2nd Edition, 1990.

II B.Tech II Semester (EEE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13EE402) TRANSFORMERS AND INDUCTION MOTORS

Objectives: This course enables the students to:

- Understand the operating principles of transformers and poly phase induction motors –their construction and testing.
- Acquire analytical ability to analyze different types of induction motors with their performance characteristics and speed Control techniques using relevant mathematical models.
- Evaluate the various performance characteristics of induction machines for industrial applications.
- Understand the starting, braking and stalling phenomena of three phase induction motors.

UNIT – I:

Single-Phase Transformers –Single phase transformers – Principle of operation, constructional details (shell and core types), ideal transformer, Minimization of Hysteresis & Eddy current losses, EMF equation, operation on no-load and load, phasor diagrams, numerical problems.

Single-Phase Transformers – Performance analysis: Equivalent circuit, Losses and efficiency, per unit system, Regulation, All-day efficiency, Effect of variations of frequency & supply voltage on Iron losses-numerical problems.

UNIT – II:

Testing of Single-Phase Transformers & Autotransformers: Open circuit and short circuit tests, Sumpner’s test, Predetermination of efficiency and regulation, separation of losses, parallel operation with equal and unequal voltage ratios-autotransformers-equivalent circuit- comparison with two-winding transformers- numerical problems.

Polyphase Transformers: Polyphase connections-Y/Y,Y/Δ,Δ/Y, Δ/Δ and Open Delta, Vector grouping, third harmonics in phase voltages, three-winding transformers, tertiary windings- determination of Z_p, Z_s and Z_t transients in switching, off-load and on-load tap changing transformers, Scott connection, numerical problems.

UNIT – III:

Three-Phase Induction Motors: Construction –stator, Cage and wound rotor, production of rotating magnetic field, principle of operation, rotor EMF and rotor frequency, rotor reactance, rotor current and power factor at standstill and during operation-numerical problems.

Characteristics of Induction Motors: Power flow diagram- Motor input, stator losses, rotor input, rotor copper loss and mechanical power developed, torque equation-deduction from torque equation,

expressions for maximum torque and starting torque, torque- slip characteristics, crawling and cogging - double-cage and deep-bar rotors, equivalent circuit – phasor diagram-numerical problems.

UNIT – IV:

Circle Diagram of Induction Motors: No-load and blocked-rotor tests, Circle diagram-predetermination of performance. Methods of starting, types of starters-direct online starting, stator reactor starting, autotransformer starting, star-delta starting, rotor resistance starter. Starting current and starting torque calculations-numerical problems.

Speed Control of Induction Motors: Speed control – change of frequency, change of poles-methods of consequent poles–cascade connections, rotor resistance method, injection of an emf into rotor circuit, induction generator, applications and numerical problems.

Text Books:

1. Dr.P.S.Bhimbra, "Electric Machinery", Khanna Publishers, 7th edition, 2006.
2. J.B.Gupta, "Theory and performance of Electrical Machines", Khanna Publishers, 14th edition, 2010.

Reference Books:

1. Charles I. Hubert."Electric Machines: Theory, Operating Applications, and Controls", Pearson publication, 2nd edition, June 2002.
2. A.E.Fitzerald, C.kingsley and S.Umans,"Electrical Machinery", Tata Mc Graw-Hill companies, New Delhi, 6th edition, 2008.
3. Samarjit Singh, "Electrical Machines", Pearson education, 2012.
5. R.K.Rajput,"A Text book of Electrical Machines", Lakshmi Publications, 2005.

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	3	**1**	**0**	**[3]**

(13EE403) CIRCUIT THEORY-II

Objectives: This course enables the students to Comprehend three phase systems with balanced and unbalanced loads and power measurements. Synthesize the transmission line parameters using two-port networks. Evaluate AC and DC transients for complex electrical systems. To Perform the comprehensive analysis of different systems in both time and frequency domain. To understand the system response in continuous time domain. Understanding the application of Fourier series, Fourier transform and Laplace transform in the analysis of electrical circuits.

UNIT – I:

Three Phase balanced Circuits: Three phase balanced circuits: Phase sequence – Star and delta connection – Relation between line and phase voltages and currents in balanced systems – Analysis of 3 phase circuits – Measurement of active and reactive power.

Three Phase Unbalanced Circuits: Analysis of Unbalanced 3 phase circuits- loop method- Application of Milliman's Theorem – Star delta Transformation Technique – Two Wattmeter method of Measurement of 3 phase power.

UNIT – II:

DC Transient Analysis: Transient response of R-L, R-C, R-L-C circuits (Series combinations only) for d.c. excitation – Initial conditions - Solution using differential equation approach and Laplace transform methods of solutions. Response of R-L & R-C networks to pulse excitation.

AC Transient Analysis: Transient response of R-L, R-C, R-L-C circuits (Series combinations only) for d.c. and sinusoidal excitations – Initial conditions - Solution using differential equation approach and Laplace transforms.

UNIT – III:

Two port Networks-I: Z, Y, ABCD and hybrid parameters and their relations-reciprocity and symmetry conditions.

Two port Networks-II: Concept of transformed network – 2-port network parameters using transformed variables – Cascaded networks

UNIT – IV

Fourier analysis of AC Circuits: Fourier theorem-Trigonometric form and exponential form of Fourier series-Conditions of symmetry-line spectra and phase angle spectra-Analysis of electrical circuits to Non sinusoidal periodic wave forms.

Fourier Transforms: Fourier integrals and Fourier transforms-Properties of Fourier transforms and applications to electrical circuits.

Text Books:

1. W.H.Hayt, J.E.Kimmerly, and S.M.Durbin "Engineering circuit analysis" McGraw Hill Education private limited, 6th Edition, 2002.
2. M.E Van Valkenburg, "Network Analysis" Prentice Hall of India, 3rd Edition, 2000.

Reference Books:

1. C. K. Alexander and M. N. O. Sadiku, "Fundamentals of Electric Circuits" Tata McGraw-Hill, 2nd edition, 2004.
2. Mahmood Nahvi, Joseph Edminister "Electric Circuits", Schuam Series, 5th edition, 2011.
3. Chakrabati A, "Circuit Theory (Analysis and Synthesis)" Dhanpath Rai & Sons, 6th edition, 2004.
4. Mahmood Nahvi and Joselph Edminister, "Electric Circuits" Schaum's Outline series TMH, 2004.
5. Ravish R Singh, "Electrical Networks" Tata McGraw-Hill Publication, 6th edition, 2010.
6. A. Sudhakar and Shyammohan S Palli, "Circuits & Networks" Tata McGraw-Hill, 4th edition, 2010.

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(13EE404) GENERATION OF ELECTRIC POWER

Objectives: To impart knowledge about the generation of electric power to meet the ever increasing demand by both conventional & Non-conventional power plants.

UNIT-I:

Thermal Power Plants: Schematic layout of thermal power station (TPS), description of TPS components: economizers, boilers, super heaters, turbines, condensers, electro static precipitator (ESP), chimneys and cooling towers.

Nuclear Power Plants: Principle and operation of nuclear reactors, different Reactor components, radiation hazards and safety precautions, Types of nuclear reactors-PWR, BWR and FBR .

UNIT – II:

Hydro-Electric Power Plants: Introduction of Hydro-electric plant & its layout. Advantages and disadvantages of Hydro-electric plants, selection of site for Hydro-electric plant, essential parts & features of Hydro-electric power plant, classification of Hydro-electric power plants depending on load & head.

Basic Renewable Energy Plants: Principles of bio conversion, types and characteristics of bio gas digesters. Principle & method of harnessing geothermal and ocean energy. Economic Aspects.

UNIT – III:

Solar and Wind Energy Generation:

Solar Energy Generation: Role and potential of solar energy options, Principles of Solar radiation. Types of Solar Energy collectors, Different methods of solar energy storage, solar applications, Economic Aspects.

Wind energy Generation: Role and potential of wind energy option, types of wind mills-performance characteristics, Applications, Betz Criteria, economic aspects.

UNIT – IV:

Economic Aspects of Power Generation: Load curve, load duration, integrated load duration curves; Demand, diversity capacity, Plant use factors Numerical Problems, classification of costs: fixed, semi fixed and Running costs.

Tariff Methods: Desirable characteristics of a Tariff method - Tariff methods: flat rate, block rate, two part, three part and power factor tariff methods and Numerical problems.

Text Books:

1. M.L.Soni,P.V Gupta,U.S Bhatnagar and A.Chakraborti "A text book on Power System Engineering" Dhanpat Rai & Co.Pvt.Ltd.1999.
2. V.K Mehta and Rohit Mehta "Principles of Power Systems" S.Chand & company LTD, New Delhi 2004.

Reference Books:

1. S.N.Singh "Electrical Power Generation, Transmission and Distribution",PHI, 2003.
2. GD Rai "Non Conventional Energy Sources "Khanna Publishers, 4th edition 2000.
3. M.V Deshpande "Elements of power station design and practice, wheeler publishing 2005.

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(13EE405) ANALOG ELECTRONIC CIRCUITS

Objectives: Students undergoing this course are expected to:

- Analyse Single stage amplifier at low and High frequencies using BJT and FETs.
- Analyse Multi stage amplifiers at low and High frequencies using BJT and FETs.
- Recognize the importance of feedback in amplifiers.
- Understand the principle, operation and design of oscillators.
- Comprehend the use of Power amplifiers and Tuned amplifiers in real time applications.
- Differentiator and Integrator circuits, clippers(limiters)
- Clampers (dc-reinserted), comparators(discriminators)

UNIT-I:

Single Stage Amplifiers Design and Analysis: Review of CE, CB, CC& CS amplifiers-Classification of Amplifiers, Distortion in amplifiers-Approximate analysis, CE, CB, CC amplifiers comparison.

BJT & FET Frequency Response: Logarithms-Decibels-General frequency consideration-Low frequency analysis-Low frequency response of BJT amplifiers-Low frequency response of FET amplifier-Miller effect capacitance-High frequency response of BJT amplifier-Square wave testing

UNIT-II:

Feedback Amplifiers: Concept of feedback, Classification of feedback amplifiers, General characteristics of negative feedback amplifiers, Effect of Feedback on Amplifier characteristics-Voltage series-Voltage shunt, Current series and Current shunt Feedback configurations-Simple problems.

Oscillators: Conditions for oscillations. RC and LC type Oscillators, Crystal oscillators, Frequency and amplitude stability of oscillators, Generalized analysis of LC oscillators, Quartz, Hartley, and Colpitts Oscillators, RC-phase shift and Wien-bridge oscillators.

UNIT –III:

Large Signal Amplifiers: Class -A Power Amplifier, Maximum Value of Efficiency of Class-A Amplifier, Transformer coupled amplifier- Push Pull Amplifier-Complimentary Symmetry Circuits (Transformer Less Class B Power Amplifier)-Phase Inverters, Transistor Power Dissipation, Thermal Runway, Heat sinks.

Linear Waveshaping: High pass, low pass RC circuits, their response for sinusoidal, step, pulse, square and ramp inputs.

Clippers and Clampers : Diode clippers, Transistor clippers, clipping at two independent levels, Transfer characteristics of clippers, Emitter coupled clipper, Comparators, applications of voltage comparators, clamping operation, clamping circuits using diode with different inputs, Clamping circuit theorem, practical clamping circuits, effect of diode characteristics on clamping voltage, Transfer characteristics of clampers.

UNIT-IV:

Switching Characteristics of Devices: Diode as a switch, piecewise linear diode characteristics, Transistor as a switch, Breakdown voltage consideration of transistor, saturation parameters of Transistor and their variation with temperature, Design of transistor switch, transistor-switching times.

Multivibrators:

Analysis and Design of Bistable, Monostable, Astable Multivibrators and Schmitt trigger using transistors.

Text books:

1. Robert L.Boylestad, Louis Nasheisky, Electronic Devices and Circuit Theory, 9th ed., Pearson Education ,2007.
2. S. Salivahanan, N. Suresh Kumar and A. VallavaraJ, Electronic Devices and Circuits, 2nd ed., TMH, 2008.
3. David A. Bell, Solid State Pulse Circuits, 4th ed., PHI, 2002.

Reference Books:

1. Robert r. Paynter, Introductory Electronic Devices and Circuits, ,7th ed., PEI, 2009
2. Anil K. Maini, Varsha Agrawal, Electronic Devices and Circuits, 1st ed., WILEY, 2009.
3. Jacob Milliman, Harbert Taub and Mothlkl S Prakash rao, Pulse,Digital & Switching Waveforms , 2nd ed., TMH, 2008.

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	3	**0**	**0**	**[3]**

(13EE406) DIGITAL ELECTRONICS

Objectives: Students undergoing this course are expected to:

- Understand the different number system, its conversions and binary arithmetic.
- Know the fundamentals of Boolean algebra and theorems, Karnaugh maps including the minimization of logic functions to SOP or POS form.
- understand the logic design of programmable devices, including PLDs
- understand RAMS, and ROMS including its sequencing and control

UNIT- I:

Digital Codes and Boolean Algebraic Switching Functions:

Types of number systems – complement representation of Negative numbers, Implementation of simple arithmetic operations and conversions using Binary, BCD, OCTAL and Hexa-Decimal Numbers. Error Detecting & Error Correcting codes- Hamming codes. Fundamental postulates of Boolean Algebra, Basic theorems and properties, Switching Functions, Canonical and Standard forms, Algebraic simplification Digital Logic Gates, Universal Gates.

UNIT- II:

Minimization of Switching Functions and Combinational Logic Design:

Map Method:- Prime Implicants, Don't care combinations, Minimal SOP and POS forms, Tabular Method, Prime- Implicant chart, Simplification Rules. Design using conventional Logic Gates, Encoder, Decoder, Multiplexer, De-Multiplexer, Introduction to Modular design using IC chips, MUX Realization of switching functions Parity bit generator, Code- converters, Hazards and hazard free realizations.

UNIT- III:

Programmable Logic Devices and Sequential Circuits:

Basic PLD's:-ROM, PROM, PAL, PLA. Realization of Switching functions using PLD's. Capabilities and limitations of Threshold gate. Classification of sequential circuits: (Synchronous, Asynchronous, Pulse mode, Level mode with examples) Basic Flip-Flops, Triggering and Excitation Tables. Steps in

Synchronous Sequential Circuit Design. Design of modulo -N Ring & Shift counters, Serial Binary Adder, Sequence Detector and Memory (Register level: Serial and Parallel).

UNIT- IV:
State Machines: FSMs AND ASMs
Finite State Machine – capabilities and Limitations, Mealy and Moore models, Examples of Mealy and Moore models, Partition Techniques and Merger chart Methods Concept of Minimal cover table.
Algorithmic State Machines:-Salient features of the ASM chart, Simple examples, System design using data path and control subsystems, control Implementations, Examples of Weighing machine and Binary multiplier.

Text Books:

1. Zvi Kohavi, Switching & Finite Automata Theory, 2nd ed., TMH, 1979.
2. Morris Mano, Digital Design, 3rd ed., PHI, 2008.
3. A.Anand Kumar, Switching Theory and Logic Design, 1st ed., PHI, 2011.

Reference Books:

1. Fletcher, An Engineering Approach to Digital Design,1st ed., PHI, 2001
2. Charles H. Roth, Fundamentals of logic design, 5th ed., Thomson Publicaitons,2006.

II B.Tech II Semester (EEE)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13EE407) ELECTRICAL MACHINES LAB-I

Objectives: The main objective of this lab is to develop the practical knowledge on DC machines for the students which are studied in the previous semester theoretically.

List of Experiments:

1. Study of DC machine parts (identification of armature, field windings, brushes, Commutator etc,.)
2. Finding armature Resistance R_a and armature inductance.
3. Magnetization characteristics of DC shunt generator. Determination of critical field resistance and critical speed.
4. Load test on DC shunt generator. Determination of characteristics.
5. Load test on DC series generator. Determination of characteristics.
6. Load test on DC compound generator. Determination of characteristics.
7. Swinburne's test and speed control of DC shunt motor. Predetermination of efficiencies.
8. Speed control methods of DC Shunt Motor.
9. Brake test on DC shunt motor. Determination of performance curves.
10. Brake test on DC compound motor. Determination of performance curves.
11. Separation of Losses in a DC Shunt Motor.

12. Fields Test on DC series machines. Determination of efficiency.
13. Hopkinson's tests on DC shunt machines. Predetermination of efficiency.
14. Retardation test on DC shunt motor. Determination of losses at rated speed.

II B.Tech II Semester (EEE)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13EE408) ELECTRICAL CIRCUITS AND SIMULATION LAB

Objectives:

List of Experiments:

1. Verification of Thevenin's and Norton's theorem
2. Verification of superposition theorem and maximum power transfer theorem
3. Verification of Compensation theorem
4. Verification of Reciprocity and Millmann's theorem
5. Locus diagrams of RL and RC series circuits
6. Series and parallel resonance
7. Determination of self, mutual inductance and coefficient of coupling
8. Verification of Z and Y Parameters
9. Verification of Transmission and Hybrid parameters
10. Measurement of active power for star and delta connected balanced loads
11. Measurement of Reactive power for star and delta connected balanced loads
12. Measurement of three phase power by two Watt meter method for Unbalanced loads

PSPICE SIMULATION:

13. Simulation of DC circuits
14. DC transient response
15. Mesh analysis
16. Nodal analysis

II B.Tech II Semester (EEE)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13EE409) PULSE AND DIGITAL CIRCUITS LAB

Objectives: The students completing this course are expected to demonstrate basic knowledge of Pulse and Digital Circuits Lab by understanding:

- Differentiator and Integrator circuits, clippers(limiters)
- clampers (dc-reinserted), comparators(discriminators)
- Switching characteristics of diodes and transistors
- Bistable multi(flip-flop), Schmitt trigger circuit

- Time Base generators(Miller, Bootstrap Voltage time base generator and Current time base generator)

Minimum twelve experiments to be conducted:
1) Linear wave shaping.
2) Non linear wave shaping-clippers.
3) Non linear wave shaping-clampers.
4) Transistor as a switch.
5) Study of logic gates.
6) Study of flip-flops.
7) Sampling gates.
8) Astable Multivibrator.
9) Monostable Multivibrator.
10) Bistable Multivibrator.
11) Schmitt trigger.
12) UJT Relaxation oscillator.
13) Colpitts oscillator.
14) RC- Phase shift oscillator.

Additional Experiments:
15) Bootstrap sweep circuit.
16) Constant current sweep generator using BJT.

II B.Tech II Semester (EEE)	**L**	**T**	**P**	**[C]**
	0	**1**	**0**	**[2]**

(13EE410) TECHNICAL SEMINAR-I

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

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

Computer Science & Engineering

II B.Tech I Semester (CSE)	L	T	P	[C]
	3	0	0	[3]

(13CS301) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Objectives: Because of dependency on electricity in day to day life, a reasonable understanding of the basics of applied electricity is important for every Engineer. The course content enables students to understand the fundamentals of electricity and magnetism, and get a comprehensive idea about circuit analysis and working principles of electrical machines.

UNIT-I:

Introduction to Electrical Engineering:

Electric current, potential and potential difference, electromotive force, electric power, ohm‟s law, basic circuit components, electromagnetism related laws, Magnetic field due to electric current flow, force on a current carrying conductor placed in a magnetic field, Faradays laws of electromagnetic induction. Self-inductance and mutual inductance, Types of induced e.m.f, Kirchhoff‟s laws. Simple problems.

Network Analysis: Basic definitions, types of elements, types of sources, resistive networks, inductive networks, capacitive networks, and series parallel circuits, star delta and delta star transformation (simple problems on above topics).

UNIT-II:

Network Theorems (only on DC and Independent Sources):

Superposition, Thevenin's, Maximum power transfer theorems and simple problems.

Alternating Quantities:

Principle of ac voltages , waveforms and basic definitions, relationship between frequency, speed and number of poles, root mean square and average values of alternating currents and voltage, form factor and peak factor, phasor representation of alternating quantities, the „j‟ operator and phasor algebra, analysis of AC circuits with single basic network element, single phase series circuits, single phase parallel circuits, single phase series parallel circuits, power in ac circuits.

UNIT-III:

DC Machines:

DC Generator:

Principle of operation of dc generator, Types of DC generators, EMF equation of a dc generator ,OCC of a DC Shunt Generator(Simple problems).

DC Motor:

Principle of operation of DC motor, Types of DC Motors, back emf, Torque equation, losses & efficiency calculation, Swinburne’s test

UNIT-IV:

A.C Machines:

Transformers : Principles of operation, Constructional Details, Ideal Transformer and Practical Transformer, EMF equation, Losses, Transformer tests (OC and SC), efficiency and regulation calculations (simple problems)

Three phase induction motor:

Construction and principle of operation, slip and rotor frequency, Slip-torque Characteristics(Simple Problems).

Text Books:

1. T K Nagasarkar, and M.S. Sukhija, Basic Electrical Engineering, Oxford University Press. Second Edition 2007
2. M.S.Naidu and S. Kamakshiah, Basic Electrical Engineering. TMH.3rd Edition 2009

Reference Books:

1. D P Kothari and I.J. Nagrath, Theory and solutions of Basic Electrical Engineering. PHI.2010
2. B.L Theraja&A.K.Theraja, "A Text Book of Electrical Technology", 23rd Revised Edition, S.Chand & Company Ltd., New Delhi, 2005.
3. H Cotton, "Advanced Electrical Technology", AH Wheeler & Co., 1990. Eugene C Lister, "Electric Circuits and Machines", New York, MCGraw-Hill, 1975.
4. V N Mittle & I Arvind Mittal, "Basic Electrical Technology",TMH 2nd edition, 2006.
5. JB Gupta, "A Course in Electrical Technology", S K Kataria& Sons, 2003.

II B.Tech I Semester (CSE)	**L**	**T**	**P**	**[C]**
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(13CS302) ELECTRONIC DEVICES AND CIRCUITS

Objectives: Students undergoing this course are expected to:

- Know the formation and properties of semiconductor materials & Understand the operation of diode
- Understand various types of rectifiers and Understand the importance of regulators
- Explain the operation of transistor and Know the need for biasing of transistor
- Explain the operation of transistor as amplifier.

UNIT- I:

Semiconductor Physics &P-N Junction Diode: Semiconductor Materials ,Intrinsic & Extrinsic Materials ,Doping Concentrations ,Continuity equation, Drift &diffusion velocity ,Hall effect, P-N junction Manufacturing types, diode equation, V-I characteristics ,Temperature dependence, Static & Dynamic resistance, Diode equivalent Circuit, Break down mechanism, Zener diode and its characteristic. Study of Photo Diode, Varactor diode, and Schottky diode

UNIT- II:

Rectifiers and Filters: P-N junction as rectifier ,Half wave ,Full wave (center tap, Bridge)rectifiers, Average current, RMS current, Rectifiers efficiency, Ripple factor ,Form Factor, Percentage of regulation, Peak inverse voltage, Problems on rectifiers.

Filters: Capacitor, Inductor Filters-section filter, π-Section filter, Problems on filters, Zener diode as voltage regulator

UNIT- III:

BJT, Transistor Biasing & Stabilization:

Transistor construction, Operation and Configurations, V-I Characteristics, Relation between Transistor Parameters(α,β,γ), Comparison between BJT Configurations ,Analysis of Q-points and Load Lines(AC,DC), Need for Biasing, Types of Biasing Techniques and their stabilization factors (I_{CEO},V_{BE}, β &S) , Thermal runaway ,Problems on Biasing , BJT as Switch and Amplifier.

UNIT- IV:

Field Effect Transistor: Introduction to FET, Types of FETs, Construction, Operations and Characteristics of JFET and MOSFET, FET Configurations, Comparison of JFET &MOSFET, Comparison between BJT and FET. Biasing of JFET and MOSFET, Problems on biasing. Principal of operation and Characteristics of UJT.

Text Books:

3. Jacob Millman, Christos C Halkias & Satyabratajit, Electronic Devices and Circuits, 2nd ed., TMH,2008.
4. Robert L Boylested and Louis Nashelsky, Electronic Devices and Circuit Theory, 9th ed., Pearson India, 2007.

Reference Books:

5. NN Bhargava, DC Kulshrestha and SC Gupta , Basic Electronics and Linear Circuits, 1st ed., TMH, 2003.
6. Millman and Grabel , Microelectronics, 2nd ed., Tata McGraw Hill, 1988.

II B.Tech I Semester (CSE)	**L**	**T**	**P**	**[C]**
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(13CS303) DIGITAL LOGIC DESIGN

Objectives: The Objective of this course is to acquire the knowledge about simplifying the circuits by different methods. The students will learn about combinational and sequential circuits analysis and design, digital circuit design optimization methods using random logic gates, multiplexers, decoders, registers, basic flip-flops ,counters and programmable logic arrays .They can analyze memory devices. They can go through different types of design tools.

UNIT-I:

Binary Systems: Digital Systems, Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes, Binary logic.

Boolean Algebra and Logic Gates: Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean algebra, Boolean functions canonical and standard forms, Digital logic gates.

UNIT-II:

Gate – Level Minimization: The Map method, Two-variable and Three-variable Map, Four-variable and Five-Variable Map, Tabular Method, product of sums simplification, Don't-care conditions, NAND and NOR implementation, other Two-level implementations.

Combinational Logic: Combinational Circuits, Analysis procedure, Design procedure, Adders, Subtractors, Code conversions, Binary multiplier, comparators, Decoders, Encoders, Multiplexers.

UNIT – III:

Synchronous Sequential Logic: Sequential circuits, latches, Flip-Flops, Analysis of clocked sequential circuits, State tables and State diagrams, State Reduction and Assignment, Flip-Flop Excitation tables, Design Procedure**.**

Asynchronous Sequential Logic: Introduction, Analysis procedure, design procedure, Primitive flow & Transition tables, Reduction of State and Flow Tables, Types of Hazards.

UNIT – IV:

Registers and Counters: Registers, shift Registers, Ripple counters, synchronous counters, other counters.

Memories and Programmable Logic: Introduction, Random-Access Memory, Types of RAM's, Read-only memory, Types of ROM's, Error Detection and correction, Programmable logic Array(PLA), Programmable Array logic(PAL), Sequential Programmable Devices.

Text Books:

1. M. Morris Mano & Michael D. Ciletti, DIGITAL LOGIC DESIGN , Fourth Edition, Pearson Education / PHI.

Reference Books:

1. R.P.Jain ,Modern Digital Electronics ,Third edition , Tata McGraw Hill.
2. Charles H. Roth, Fundamentals Of Logic Design, Fifth Edition, Thomson.
3. A.Anandkumar, Fundamentals of digital circuits, Fourth edition, PHI.
4. Adicherla Mallesh, Switching Theory and Logic Design, Professional education group.

II B.Tech I Semester (CSE)	**L**	**T**	**P**	**[C]**
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(13CS304) OBJECT ORIENTED PROGRAMMING THROUGH C++

Objectives:

- Object orientation is a new approach to understand the complexities of the real world.
- In contrast to the earlier approaches like procedural etc, object orientation helps to formulate the problems in a better way giving high reliability, adaptability and extensibility to the applications.
- The students are already familiar with this concept of programming in C which is the basic for C++.
- This course offers the modern programming language C++ that shall help the students to implement the various concept of object orientation practically.
- The students will be able to programme in the object oriented technology with the usage of C++.

UNIT- I:

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

Input and Output in C++ - cin and cout statements.

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

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

UNIT- II:

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

Class Overview: Structures in C and C++, classes in C++, class declaration, Access specifiers, defining, member functions, Object creation, memory allocation to class members, Accessing of class members. Static Class Members: Static member variables, Static Member Functions, static objects. Passing objects as arguments, Returning objects, Friend functions – characteristics, friendly classes, Friend function bridge between two classes.

UNIT- III:

Generic Programming with Templates: Need of templates, function templates, function templates with more arguments, overloading of Template Functions, class templates, class templates with more arguments, Guidelines for templates.

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

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

UNIT- IV:

Inheritance: Base class & derived class, Access specifiers and simple inheritance , types of inheritance-single, multi level, multiple, Hierarchical, hybrid, multipath, virtual base classes, Constructor and destructor in derived class. Advantages and disadvantages of Inheritance.

Polymorphism: Binding in C++, Pointer to derived class objects, Virtual functions – Runtime polymorphism using virtual functions, pure virtual functions, and Abstract classes.

Exception handling: Principles, keywords. Exception Handling Mechanism

I/O Streams: Console I/O-Unformatted I/O, and formatted I/O. File I/O-opening and closing a file

Text Books:

1. Ashok N. ***Kamthane*** ,Object Oriented Programming with **C++**, Pearson Education India, 2003.

Reference Books:

1. Herbert Schildt, C++ the Complete Reference , Third edition, Tata McGraw Hill, 1999
2. Barkakatin ,objects oriented programming in C++, PHI ,1995.
3. **Lafore ,Object Oriented Programming In C++, Fourth Edition, PEARSON EDUCATION.**
4. Herbert Schildt , C++: The Complete Reference, Forth Edition, Tata McGraw Hill.
5. Bjarne stroustup ,The C++ Programming Language ,Special Edition.

II B.Tech I Semester (CSE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13CS305) DATA STRUCTURES

Objectives: The objective of this course is to teach students various data structures and to explain them algorithms for performing various operations on these data structures.

The course aims are:

- Demonstrate familiarity with major algorithms and data structures.
- Analyze performance of algorithms.
- Choose the appropriate data structure and algorithm design method for a specified application.

- Determine which algorithm or data structure to use in different scenarios.
- Be familiar with writing recursive methods.

UNIT- I:

Introduction to Algorithms: performance analysis- time complexity and space complexity, Asymptotic notations and their significance.

Introduction to Data structures: Data Objects and structures,

Arrays- ADT, Indexing a C++ array, Row- and Column- major mappings, row major and column major representations.

Linear List- Linear List Data structure.

Array Representation: inserting element, removing an element. Multiple Lists in a single Array. **Linked representation**: singly Linked List – Representation, creating list, traversing, insertion, deletion.

UNIT-II:

Other Linked Lists: Doubly linked list- Representation, creating list, traversing, insertion, deletion. circular linked list and Header Nodes, Applications.

Stacks: Definitions, Abstract Data Type, Array representation, Linked representation, infix to post fix conversion, postfix expression evaluation, recursion using Stack.

Queues: Definitions, Abstract Data Type, Array representation, Linked representation, Applications. Double Ended queue, circular queue, applications.

UNIT- III:

Non-Linear Data Structures

Tree: Definition, Tree representation.

Binary tree - definitions and properties, representation of binary tree, operations on binary tree, binary tree traversal – in order, pre order, post order and level order. Binary tree ADT.

Binary Search Trees: Definition, ADT, Operations- Searching, Inserting an element, Deleting an element, and Height of Binary search tree. Indexed Binary Search Tree.

Balanced Search Trees: Introduction, AVL Trees: Definition, Height of an AVL Tree, Representation of AVL tree, Searching an AVL search tree, Inserting into AVL search tree, Deleting AVL search tree**.**

UNIT-IV:

Balanced Search Trees: Red –Black trees: properties, Operations- Searching, Insertion and Deletion, Splay Trees, B-Trees: B-Tree of order m, height of a B-Tree, insertion, deletion and searching. Comparison of Search Trees.

Priority Queues: Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion

Searching – Linear, Fibonacci and binary search methods. **Sorting** – Bubble sort, selection sort, Insertion sort, Quick sort, merge sort, heap sort.

Text Books:

1. S.Sahni, 'Data structures, Algorithms and Applications in C++', University Press (India) Pvt.Ltd, 2nd edition.

Reference Books:

1. Seymour lipschutz 'Theory and Problems of Data Structures' - schaum's outline series. TMH
2. G A V Pai, 'Data Structures and Algorithms: Concepts, Techniques and Applications' Tata McGraw-Hill, 2008 Second edition

3. Mark Allen Weiss, 'Data structures and Algorithm Analysis in C++ ', Pearson Education. Ltd. ,Second Edition.
4. Ellis Horowitz, Sartaj Sahni, Dinesh Mehta, 'Fundamentals of Data Structure in C++', second edition
5. Yashvanth Kanetkar, ' Data structures through C++' bpb publications

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(13CS306) BASIC ELECTRICAL AND ELECTRONICS LAB

Objectives: To understand the concepts of electric circuits and the performance characteristics of machines. This laboratory course will give a thorough knowledge about the basics of circuit analysis, DC machines and transformers.

List of Experiments:

PART –A: ELECTRICAL LAB

1. Verification of Superposition theorem
2. Verification of Thevenin`s and Norton`s Equivalent circuits and Verification by direct Test
3. Magnetization characteristics of DC Shunt Generator. Determination of critical Resistance.
4. Swinburne`s Test on DC Shunt machine(Predetermination of efficiency of a given DC shunt machine working as motor and generator)
5. Brake Test on DC Shunt Motor. Determination of performance characteristics
6. OC and SC Test on single phase Transformer(Predetermination of efficiency and regulation at given power factors and determination of Equivalent circuit)

PART –B: ELECTRONICS LAB

1. Identification, Specifications and Testing of R, L, C components (colour codes),Potentiometers, Switches (SPDT, DPDT and DIP), Coils, Gang Condensers, Relays, Bread Boards, Identification and Specifications of active devices, Diodes, BJTs, Lowpower JFETs, MOSFETs, LEDs, LCDs, SCR, UJT, Linear and Digital Ics.
2. PN Junction Diode Characteristics (Forward bias, Reverse bias).
3. Zener Diode Characteristics and Zener as regulator.
4. Transistor CE Characteristics (Input and Output).
5. Rectifier without Filters (Full wave & Half wave).
6. Rectifier with Filters (Full wave & Half wave)

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(13CS307) DATA STRUCTURES LAB

Objectives:

- To develop skills to design and analyze simple linear and non linear data structures
- To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
- To Gain knowledge in practical applications of data structures
- To make the student write ADTS for all data structures.

Recommended Systems/Software Requirements:

- Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space
- C++ compiler and STL Recommended

14. Write a C/C++ Program to perform the following operations on Singly linked list
i) creation ii) insertion iii) deletion iv) search v) display

15. Write a C/C++ Program to perform the following operations on doubly linked list
i) creation ii) insertion iii) deletion iv) search v) display

16. Write C/C++ programs to implement the Stack using an array and Singly Linked List.

17. Write a C/C++ program that uses Stack operations to perform the following:
i) Converting infix expression into postfix expression
ii) Evaluating the postfix expression

18. Write C/C++ programs to implement the Queue using an array and Singly Linked List.

19. Write C/C++ programs to implement the deque (double ended queue) using a doubly linked list.

20. Write a C/C++ program to create binary tree and traverse the binary tree in
ii) Pre order ii) In order iii) Post order
(Write both recursive and non recursive functions)

21. Write a C/C++ program to perform the following operations on Binary Search Tree:
a) Insert ion b) Deletion c) Search d) Ascend e) Height

22. Write C/C++ programs to implement the following search methods
i) Linear Search ii) Binary search

23. Write C/C++ programs for implementing the following sorting methods:
ii) Bubble sort ii) Selection Sort

24. Write C/C++ Programs for implementing the following sorting methods
ii) Insertion ii) Quick sort

25. Write C++ programs for implementing the following sorting methods
ii) Heap Sort ii) merge sort

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(13CS308) OBJECT ORIENTED PROGRAMMING THROUGH C++ LAB

Objectives:

- Object-oriented programming (OOP) is a programming paradigm that uses abstraction to create models based on the real world.
- It utilizes several techniques from previously established paradigms, including modularity, polymorphism, and encapsulation.
- Object-oriented programming is intended to promote greater flexibility and maintainability in programming, and is widely popular in large-scale software engineering.

WEEK 1:

1. Raising a number n to a power p is the same as multiplying n by itself p times. Write a function called power ( ) that takes a double value for n and an int value for p, and returns the result as double value. Use a default argument of 2 for p, so that if this argument is omitted, the number will be squared. Write a main ( ) function that gets values from the user to test this function.

WEEK 2:

2. A point on the two dimensional plane can be represented by two numbers: an X coordinate and a Y coordinate. For example, (4,5) represents a point 4 units to the right of the origin along the X axis and 5 units up the Y axis. The sum of two points can be defined as a new point whose X coordinate is the sum of the X coordinates of the points and whose Y coordinate is the sum of their Y coordinates.
Write a program that uses a structure called point to model a point. Define three points, and have the user input values to two of them. Than set the third point equal to the sum of the other two, and display the value of the new point. Interaction with the program might look like this:
Enter coordinates for P1: 3, 4
Enter coordinates for P2: 5 7 Coordinates of p1 + P2 are: 8, 11

WEEK 3:

3. Create the equivalent of a four function calculator. The program should request the user to enter a number, an operator, and another number. It should then carry out thebspecified arithmetical operation: adding, subtracting, multiplying, or dividing the two numbers. (It should use a switch statement to select the operation). Finally it should display the result.
When it finishes the calculation, the program should ask if the user wants to do another calculation. The response can be Y or N . Some sample interaction with the program might look like this.
Enter first number, operator, second number: 10/ 3 Answer = 3.333333
Do another (Y/ N)? Y
Enter first number, operator, second number 12 + 100 Answer = 112
Do another (Y/ N) ? N

WEEK 4:

4. A phone number, such as (212) 767-8900, can be thought of as having three parts: the area code (212), the exchange (767) and the number (8900).

Write a program that uses a structure to store these three parts of a phone number separately. Call the structure phone. Create two structure variables of type phone. Initialize one, and have the user input a number for the other one. Then display both numbers. The interchange might look like this :

Enter your area code, exchange, and number: 415 555 1212
My number is (212) 767-8900
Your number is (415) 555-1212

WEEK 5:
5. Create two classes DM and DB which store the value of distances. DM stores distances in meters and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB.
Use a friend function to carry out the addition operation. The object that stores the results may be DM object or DB object, depending on the units in which the results are required.
The display should be in the format of feet and inches or metres and cenitmetres depending on the object on display.

WEEK 6:
6. Create a class rational which represents a numerical value by two double values-NUMERATOR & DENOMINATOR. Include the following public member Functions:
Constructor with no arguments (default).
Constructor with two arguments.
void reduce( ) that reduces the rational number by eliminating the highest common factor between the numerator and denominator.
Overload + operator to add two rational number.
Overload >> operator to enable input through cin.
Overload << operator to enable output through cout.
Write a main ( ) to test all the functions in the class.

WEEK 7:
7. Consider the following class definition
class father {
protected : int age; public;
father (int x) {age = x;} virtual void iam ( )
{ cout < < I AM THE FATHER, my age is : << age<< end1:} };
Derive the two classes son and daughter from the above class and for each, define iam ( ) to write our similar but appropriate messages. You should also define suitable constructors for these classes. Now, write a main ( ) that creates objects of the three classes and then calls iam ( ) for them. Declare pointer to father. Successively, assign addresses of objects of the two derived classes to this pointer and in each case, call iam ( ) through the pointer to demonstrate polymorphism in action.

WEEK 8:
8. Write a program that creates a binary file by reading the data for the students from the terminal.
The data of each student consist of roll no., name (a string of 30 or lesser no. of characters) and marks.

WEEK 9:
9. A hospital wants to create a database regarding its indoor patients. The information to store include
a) Name of the patient

b) Date of admission
c) Disease
d) Date of discharge

Create a structure to store the date (year, month and date as its members). Create a base class to store the above information. The member function should include functions to enter information and display a list of all the patients in the database. Create a derived class to store the age of the patients. List the information about all the to store the age of the patients. List the information about all the pediatric patients (less than twelve years in age).

WEEK 10:

10. Make a class Employee with a name and salary. Make a class Manager inherit from Employee. Add an instance variable, named department, of type string. Supply a method to string that prints the manager s name, department and salary. Make a class Executive inherit from Manager. Supply a method to String that prints the string Executive followed by the information stored in the Manager superclass object. Supply a test program that tests these classes and methods.

WEEK 11:

11. Imagine a tollbooth with a class called toll Booth. The two data items are a type unsigned in to hold the total number of cars, and a type double to hold the total amount of money collected. A constructor initializes both these to 0. A member function called payingCar ( ) increments the car total and adds 0.50 to the cash total. Another function, called nopayCar ( ), increments the car total but adds nothing to the cash total. Finally, a member function called displays the two totals.
Include a program to test this class. This program should allow the user to push one key to count a paying car, and another to count a nonpaying car. Pushing the ESC kay should cause the program to print out the total cars and total cash and then exit.

WEEK 12:

12. Write a function called reversit ( ) that reverses a string (an array of char). Use a for loop
that swaps the first and last characters, then the second and next to last characters and so on. The string should be passed to reversit ( ) as an argument.
Write a program to exercise reversit ( ). The program should get a string from the user, call reversit ( ), and print out the result. Use an input method that allows embedded blanks. Test the program with Napoleon s famous phrase, Able was I ere I saw Elba) .

WEEK 13:

13. Create some objects of the string class, and put them in a Deque-some at the head of the Deque and some at the tail. Display the contents of the Deque using the forEach ( )
function and a user written display function. Then search the Deque for a particular string, using the first That ( ) function and display any strings that match. Finally remove all the items from the Deque using the getLeft ( ) function and display each item.
Notice the order in which the items are displayed: Using getLeft ( ), those inserted on the left (head) of the Deque are removed in last in first out order while those put on the right side are removed in first in first out order. The opposite would be true if getRight ( ) were used.

WEEK 14:

14. Create a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get_data ( ) to initialize base class data members and another member function display_area ( ) to compute and display the area of figures. Make display_area ( ) as a virtual function and redefine this function in the derived classes to suit their requirements.Using these three classes, design a program that will accept dimensions of a triangle or a rectangle interactively and display the area.

Remember the two values given as input will be treated as lengths of two sides in the case of rectangles and as base and height in the case of triangles and used as follows:

Area of rectangle = x * y
Area of triangle = ½ * x * y

Text Books:

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

Reference Books:

1. Object oriented Programming with C++ by E Balagurusamy.
2. Computing Concepts with C++ Essentials by Horstmann.
3. The Complete Reference in C++ By Herbert Schildt.

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(13HS118) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Objectives: To explain the basic principles of managerial economics, accounting and current business Environment underlying business decision making

UNIT- I:

Introduction to Managerial Economics: Definition, Nature and Scope of Managerial Economics–Demand Analysis: Determinants, Law of Demand and its exceptions.

Elasticity of Demand: Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, methods, (survey methods, statistical methods, expert opinion method, test marketing, controlled experiments, judgmental approach to demand forecasting)

UNIT- II:

Theory of Production: Production Function – Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale.

Cost Analysis: Cost concepts, Opportunity cost, Fixed vs. Variable costs, Explicit costs Vs. Implicit costs, Out of pocket costs vs. Imputed costs.

Break-Even Analysis : (BEA)-Determination of Break-Even Point (simple problems)

Market: Types of competition, Price-Output Determination in case of Perfect Competition and Monopoly, Monopolistic competition.

Methods of Pricing: Cost, competition, strategy based pricing

UNIT -III:

Business Types: Business, features, Sole Proprietorships, Partnerships, Joint Stock Companies, Public Enterprises and their types.

Capital and Capital Budgeting: Capital and its significance, Types and sources of raising finance. Nature and scope of Capital Budgeting, Features, Methods: Payback Method, Accounting Rate of Return Method (ARR) and Net Present Value Method (simple problems)

UNIT- IV:

Financial Accounting: Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts. (Simple Problems)

Financial Analysis through Ratios: Computation, Analysis and Interpretation of Liquidity Ratios (Current Ratio and quick ratio), Capital structure Ratios (Debt- Equity ratio, Interest Coverage ratio), Activity Ratios (Inventory turnover ratio and Debtor Turnover ratio), and Profitability ratios (Gross Profit Ratio, Net Profit ratio, Operating Ratio, P/E Ratio and EPS), (Simple Problems).

Text Books:

4. Aryasri: **"Managerial Economics and Financial Analysis",** TMH,2nd edition, 2005.
5. SA Siddiqui and AS Siddiqui **"Managerial Economics and Financial Analysis"**, New age international publishers.
6. Varshney & Maheswari: **"Managerial Economics"**, Sultan Chand, 2003.

Codes/Tables: Present Value Tables need to be permitted into the examination Hall.

Reference Books:

1. Raghunatha Reddy & Narasimhachary: **"Managerial Economics& Financial Analysis"**, Scitech,2009
2. V. Rajasekaran & R. Lalitha,**" Financial Accounting"**, Pearson Education, New Delhi,2010.
3. Suma Damodaran, **"Managerial Economics"**, Oxford University Press.
4. Domnick Salvatore: **"Managerial Economics In a Global Economy"**, Thomson, 4th Edition.
5. Subash Sharma & M.P. Vittal, "**Financial Accounting for management**", **Text & Cases**, Machmillan 2008
6. S.N.Maheswari & S.K. Maheswari,**" Financial Accounting"**, Vikas,2008
7. Truet and Truet: **"Managerial Economics:Analysis", Problems and Cases**, Wiley,2009
8. Dwivedi:**"Managerial Economics"**, Vikas, 6th Edition,2009

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(13CS401) COMPUTER ORGANIZATION

Objectives:

- Students will learn the fundamentals of computer organization. It is relevant to classical & modern problems of computer design.
- Students will be able to identify where, when and how enhancements of computer Performance can be accomplished.
- Students will see how to use concepts of computer in real life setting using various PC performance improvements.
- Understand the mining of ALU, control unit, CPU and its function also in real life.

UNIT- I:

Basic Structure of Computers: Computer Types, Functional unit, Basic operational concepts, Bus structures.

Register Transfer Language and Micro operations: Register Transfer language, Register Transfer, Bus and memory transfers-Three state bus buffer, Memory transfer,

Arithmetic Micro operations- binary adder, binary adder-subtractor, binary incrementer, arithmetic circuit.

Logic micro operations- List of logic micro operations, Hardware implementation, some applications

Shift micro operations- Hardware implementation**.** Arithmetic logic shift unit

UNIT- II:

Basic Computer Organization and Design: Instruction codes- Stored program organization, indirect address.

Computer Registers- Common bus system.

Computer Instructions- Instruction set completeness.

Timing and Control, **Instruction cycle-** Fetch and decode, determine the type of instruction, register-reference instructions, Memory Reference Instructions.

Input – Output and Interrupt- Input-output configuration, Input-output instructions, program interrupt, Interrupt cycle, Addressing modes

Micro Programmed Control: Control memory, Address sequencing- Conditional branching, Mapping of Instruction, subroutines.

Micro Program Example- Computer configuration, Microinstruction Format, Symbolic Microinstructions, The fetch routine, Symbolic Micro program, binary Micro program.

Design of Control Unit- Micro program Sequencer.

UNIT- III:

Input-Output Organization: Peripheral Devices- ASCII Alphanumeric Characters.

Input-Output Interface-I/O Bus and Interface Modules, I/O versus Memory bus, Isolated verses Memory Mapped I/O, Example of I/O Interface.

Asynchronous data transfer- Strobe control, Handshaking, Asynchronous serial transfer, Asynchronous communication interface, First in-First-out buffer**,**

Modes of Transfer- Example of programmed I/O, Interrupt-Initiated I/O, software considerations, **Priority Interrupt-** Daisy chaining priority, Parallel priority Interrupt, Priority Encoder, Interrupt cycle, software routines, Initial and final operations.

Direct memory Access-DMA controller, DMA transfer

Input –Output Processor (IOP) – CPU-IOP communication, IBM 370 I/O channel, Intel 8089 IOP

UNIT- IV:

Memory Organization: Memory Hierarchy, Main memory- RAM and ROM chips, Memory Address map.

Auxiliary memory – Magnetic Disks, Magnetic Tapes.

Cache Memory – Associative mapping, Direct mapping, Set associative mapping.

Virtual memory- Address space and memory space, address mapping using pages, associative memory page table, page replacement

Pipeline and Vector Processing: Parallel Processing, Pipelining- General Considerations, Arithmetic Pipeline, Instruction Pipeline**-** Data dependency, Handling of Branch Instructions.

Vector processing- Vector operations, matrix multiplication, memory interleaving, superscalar processors, supercomputers

Text Books:

1. Moris Mano, Computer System Architecture-,IIIrd Edition,Pearson/PHI.
2. C. Hamacher, V. Zvonko, S. Zaky, "Computer Organization" 5thedition, McGraw Hill, 2002, ISBN 007-120411-3.

Reference Books:

1. William Stallings, Computer Organization and Architecture- Sixth Edition,Pearson/PHI.
2. Andrew S.Tanenbaum , Structured Computer Organization-4th edition, PHI/Pearson.
3. Sivaraama Dandamudi,Springer , Fundamentals of Computer organization and design- Int. Edition.
4. John L.Hennessy and David A.Patterson, Computer Architecture a Quantitative approach, Fourth Edition, Elsevier.
5. Joseph D.Dumas , Computer Architecture: Fundamentals and principles of computer design II, BS Publication.

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(13CS402) DATABASE MANAGEMENT SYSTEMS

Objectives: The following are the major objectives of this course:

- To expose the student to the basic concepts involved in designing and building a database management system,
- Learn how to use the Structured Query Language (SQL)
- Understand the relational model and relational database management system
- To provide detailed knowledge of Transaction, concurrency and recovery strategies of DBMS.
- To know how normalization is important for DBMS and different normalization Techniques.

UNIT- I:

Databases and Database Users: Introduction, Characteristics of the Database Approach, Actors on the Scene, Workers behind the Scene, advantages of Using the DBMS Approach

Database System Concepts and Architecture: Data Models, Schemas, and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, The Database System Environment, Centralized and Client/Server Architectures for DBMSs, Classification of Database Management Systems

Data Modeling Using the Entity-Relationship (ER) Model: Entity Types, Entity Sets, Attributes, and Keys, Relationship Types, Relationship Sets, Roles, and Structural Constraints. Weak Entity Types, Refining the ER Design for the COMPANY Database, Notations for ER Diagrams, Relationship Types of Degree Higher than Two

UNIT-II:

The Relational Data Model: Relational Model Concepts, Relational Model Constraints, Relational Database Schemas, Update Operations, Transactions, and Dealing with Constraint Violations [145-165]. Relational Database Design by ER-to-Relational Mapping.

Structured Query Language (SQL): Introduction, SQL data definition and data types, DDL, DML, DCL and TCL Commands- Integrity Rules-Enforcing Integrity constraints. Basic Queries in SQL: SELECT, FROM, WHERE CLAUSES, pattern matching, Arithmetic operators, ordering of query results. More complex SQL

queries: comparison using NULL, Nested Queries, correlated Nested Queries, joining tables, Aggregate functions, GROUP BY AND HAVING Clauses, SQL functions, views, Triggers

UNIT-III:

Normalization for Relational Databases: Informal Design Guidelines for Relation Schemas, Functional Dependencies, Normal Forms Based on Primary Keys, General Definitions of Second and Third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form

Disk Storage: Introduction, Secondary Storage Devices, Buffering of Blocks. Basic File Structures: Placing File Records on Disk, Operations on Files, Files of Unordered Records (Heap Files) , Files of Ordered Records (Sorted Files), Hashing Techniques, Other Primary File Organizations, RAID Technology

UNIT-IV:

Transaction Processing: Introduction, Transaction and System Concepts, Properties of Transactions, Characterizing Schedules based on recoverability, Characterizing Schedules based on serializability [T1:P611-P636].

Concurrency Control Techniques: Two-Phase Locking Techniques for Concurrency Control, Concurrency Control Based on Timestamp Ordering, Validation (Optimistic) Concurrency Control Techniques, Multiple Granularity Locking [T1:P643-P664].

Database Recovery Techniques: Recovery Concepts, Recovery Based on Deferred Update, Recovery Based on Immediate Update, Shadow Paging, And The ARIES Recovery Algorithm

Text Books:

1. Ramez Elmasri, Shamkant B.Navathe , Fundamentals of Database Systems 5th edition pearson.

Reference Books:

1. Silberchartz,Korth,Sudarshan , Database System Concepts, V Edition,McGraw Hill.
2. Ivan Bayross , SQL,PL/SQL 3rd Ed, BPB Publication.
3. Raghurama Krishnan,Johannes Gehrke , Database Management Systems III Ed, TATA McGrawHill.
4. C.J.Date, Introduction to Database Systems, Pearson Education.
5. The X team,S.Shah and V.shah, Oracle for Professionals, SPD.
6. Shah, Database systems Using Oracle:A simplified guide to SQL and PL/SQL, PHI.
7. M.L.Gillenson , Fundamentals of Database Management Systems,Wiley Student Edition.

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	3	**1**	**0**	**[3]**

(13CS403) JAVA PROGRAMMING

Objectives: The main objective is to make the student learn about object oriented paradigm, understand to correlate the real life entities in the problem and characterize them as specializations and generalizations

UNIT-I:

Introduction: Need for OOP paradigm, History and Evolution of java, Java buzzwords, data types, variables, arrays, operators, control statements, simple Java program.

Introducing Classes: Class Fundamentals, Declaring objects, Introducing methods, constructors, this keyword, garbage collection, finalize() Method, overloading methods and constructors, Using objects as parameters, Argument passing, Returning objects, recursion, Access Control, Understanding static, Introducing final keyword, Introducing Nested and Inner Classes, Exploring the String class, Using Command-Line Arguments.

UNIT-II:

Inheritance: Inheritance basics, Using super, forms of inheritances, When constructors are called , method overriding, dynamic method dispatch Using abstract classes, using final with inheritance, the Object class.

Packages and Interfaces: Packages, Access Protection, Importing Packages, Interfaces.

The Applet Class: Two Types Of Applets, Applet Basics, Applet Architecture, an Applet Skeleton, Simple Applet Display Methods.

UNIT-III:

Exception Handling and Multithreading: Exception Handling Fundamentals, Exceptions Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally keywords, Java Built-in Exceptions, creating own exception subclasses, Chained Exceptions, Using Exception.

The Java Thread Model: The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread priorities, Synchronization, Inter thread communication, deadlocks, thread groups, Using Multithreading.

Event Handling: Two Event Handling Mechanisms, Delegation Event Model, Event Classes, Sources of Events, Event Listener Interfaces, Using the Delegation Event Model, Adapter classes.

UNIT-IV:

Software Development Using JAVA

Introducing Swing: The Origins Of Swing, Swing Is Built On The AWT, Two Key Swing Features, The MVC Connection, Components And Containers, The Swing Packages, A Simple Swing Application, Event Handling, Create A Swing Applet.

Exploring Swings : JLabel and ImageIcon, JTextField, the Swing Buttons, JTabbedPane, JScrollPane, JList, JCombobox, Trees, JTable.

Networking and Java Library: Basics of Networking, Inetaddress, TCP/IP sockets, Datagrams, URL, URL connection, String handling, java.util, java.io and java.net packages.

Text Books:

1. Herbert Schildt, The Complete Reference Java J2SE 7th Edition, TMH Publishing Company Ltd, NewDelhi.

Reference Books:

1. H.M.Dietel and P.J.Dietel, Java How to Program, Sixth Edition, Pearson Education/PHI
2. Cay.S.Horstmann and Gary Cornell, Core Java 2, Vol 1, Fundamentals, Seventh Edition, Pearson Education.
3. Cay.S.Horstmann and Gary Cornell, Core Java 2, Vol 2, Advanced Features, Seventh Edition, Pearson Education.

4. Iver Horton, Beginning in Java 2, Wrox Publications.
5. , Somasundaram, Jaico, Java.
6. Cay Horstmann, John Wiley and Sons ,Big Java 2nd Edition,.

II B.Tech II Semester (CSE)	**L**	**T**	**P**	**[C]**
	3	**0**	**0**	**[3]**

(13CS404) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

Objectives: The objective of this course is to present the foundations of many basic computer related concepts and provide a coherent development to the students for the courses like Fundamentals of Computer Organization, RDBMS, Data Structures, Analysis of Algorithms, Theory of Computation, Cryptography, Artificial Intelligence and others. This course will enhance the students' ability to think logically and mathematically. It presents Knowledge of basic concepts on sets, different operations on sets, binary operations, functions.

UNIT- I:
Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables tautology, equivalence implication, Normal forms, Theory of inference for the statement calculus. Rules of inference, Consistency of premises and indirect method of proof.
Predicate calculus: Predicates, statement functions, variables and quantifiers, predicate formulas, free & bound variables, universe of discourse, inference theory of predicate calculus.

UNIT- II:
Set Theory & Relations: Introduction, Relations and ordering, Properties of binary Relations, Equivalence, Compatibility Relations, Partial ordering, Hasse diagram.
Functions: composition of functions, Inverse Function, Recursive Functions, Lattice and its Properties, Pigeon hole Principles and its application.
Algebraic structures: Algebraic systems, Examples and general properties, Semi groups and monoids, groups, sub groups, Definitions, Examples, homomorphism, Isomorphism and related problems.

UNIT- III:
Elementary Combinatorics: Basis of counting, Enumeration of Combinations & Permutations, Enumerating of Combinations & Permutations with repetitions and constrained repetitions. **Recurrence Relations:** Generating Function of Sequences, Calculating Coefficient of generating functions, Recurrence relations, Solving recurrence relation by substitution and Generating functions, The method of Characteristic roots, Solution of Inhomogeneous Recurrence Relation.

UNIT- IV:
Graph Theory: Representation of Graph, Spanning Trees, BFS, DFS, Kruskals Algorithm, Binary trees, Planar Graphs.
Graph Theory and Applications: Basic Concepts, Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers

Text Books:
1. J.P Tremblery, R.Manohar, Discrete Mathematical Structures with Applications to computer science ,TMH.

2. J.L.Molt,A.Kandel,T.P.Baker, Discrete Mathematical for computer Scientists & Mathematicians ,PHI.

Reference Books:

1. C L Liu, D P Mohanpatra, Elements of Discrete Mathematics, TMH.
2. Schaum's Outlines,Lipschutz,Lipson , Discrete Mathematics, TMH.

II B.Tech II Semester (CSE)	**L**	**T**	**P**	**[C]**
	3	**1**	**0**	**[3]**

(13CS405) OPERATING SYSTEMS

Objectives:

- To understand the services provided by and the design of an operating system.
- To understand the structure and organization of the file system.
- To understand what a process is and how processes are synchronized and scheduled.
- To understand different approaches to memory management.
- Students should be able to use system calls for managing processes, memory and the file system.
- Students should understand the data structures and algorithms used to implement an OS.

UNIT – I:

Operating System Overview: Introduction, Operating Systems functions, Distributed systems, Special purpose systems, Operating systems Structures and System calls, Operating System generation.

Process Management: Process Concepts, Process Scheduling Criteria, algorithms and their evaluation, Inter process communication, Threads, Multi threaded models.

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

UNIT- II:

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

Memory Management: Swapping, Contiguous memory allocation, Paging, Structure of the Page Table, Segmentation, Virtual memory, Demand paging, Page – Replacement algorithms, Allocation of frames, Thrashing.

UNIT- III:

Storage System Interfaces: Concept of a File, Access methods, Directory Structure, File System mounting, File sharing and protection, Allocation methods, Free space management.

Overview of Mass storage structures: Disk structure, Disk attachment, Disk scheduling, Swap – space management.

I/O Systems, Hardware, Application I/O interface, Kernel I/O sub systems, Transforming I/O requests Hardware operations, STREAMS, Performance.

UNIT- IV:

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

Security : The Security Problem, Program Threats, System and Network Threats cryptography as a Security Tool, User Authentication, Implementing Security Defenses, Fire walling to Protect Systems and Networks, Computer Security Classifications.

Text Books:

1. Abraham Silberchatz, Peter B. Galvin, Greg Gange, Operating System Concepts, Eighth edition, John Wiley.

Reference Books:

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

II B.Tech II Semester (CSE)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13CS406) OPERATING SYSTEMS LAB

Objectives:

- To understand the services provided by and the design of an operating system.
- To understand the structure and organization of the file system.
- To understand what a process is and how processes are synchronized and scheduled.
- To understand different approaches to memory management.
- Students should be able to use system calls for managing processes, memory and the file system.
- Students should understand the data structures and algorithms used to implement an OS.

List of Experiments:

1) To implement the CPU Scheduling algorithms
   a) FCFS(First Come First Served) b) SJF(Shortest Job First)
   c) RR(Round Robin) Scheduling d) Priority Scheduling
2) To simulate a program for MVT (Multiprogramming Variable Task).
3) To simulate a program for MFT (Multiprogramming Fixed Task).
4) To Implement the Banker's Algorithm for Deadlock Avoidance.
5) To Implement the Banker's Algorithm for Deadlock Prevention.
6) To Implement the Program for File Allocation Methods.

a) Sequential File Allocation b) Indexed File Allocation c) Linked File Allocation.

7) To Simulate all File Organization Techniques
   a) Single level directory b) Two level directory c) Hierarchical d) DAG.
8) To implement a program for Page Replacement Policies.
   a) FIFO (First In First Out) Page Replacement
   b) LRU (Least Recent Used) Page Replacement
   c) Optimal Page Replacement (LFU)
9) To implement a program for Paging Memory Allocation Technique.
10) To implement a program for Segmentation Memory Allocation Technique
11) To implement a program for Shared Memory and IPC.
12) To simulate an algorithm for Deadlock Detection

II B.Tech II Semester (CSE)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13CS407) JAVA LAB

Objectives:

- To make the student learn a object oriented way of solving problems.
- To teach the student to write programs in Java to solve the problems

WEEK 1:

a) Write a Java program that prints all real solutions to the quadratic equation ax2 + bx + c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b2 -4ac is negative, display a message stating that there are no real solutions.

b) The Fibonacci sequence is defined by the following rule

c) Write a Java program to print the given number is Armstrong or not

d) Write a Java program to find simple Interest.

WEEK 2:

a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.

b) Write a Java program to find the product of matrices.

c) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)

WEEK 3:

a) Write a Java program that checks whether a given string is a palindrome or not. Ex: MALAYALAM is a palindrome.

b) Write a Java program for sorting a given list of names in ascending order.

c) Write a Java program to make frequency count of words in a given text.

WEEK 4:

a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.

b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.
c) Write a Java program that displays the number of characters, lines and words in a text file.

WEEK 5:
a) Write a Java program that:
i) Implements stack ADT.
ii) Converts infix expression into Postfix form
iii) Evaluates the postfix expression

WEEK 6:
a) Develop an applet that displays a simple message.
b) Develop an applet that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named "Compute" is clicked.

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

WEEK 8:
a) Write a Java program for handling mouse events.

WEEK 9:
a) Write a Java program to illustrate multi-Threading.
b) Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

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

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

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

WEEK 13:

a) Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism.

b) Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are 153eparated by commas. Write a java program to display the table using Jtable component.

II B.Tech II Semester (CSE)	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13CS408) DATABASE MANAGEMENT SYSTEMS LAB

Objectives:

- Student will able to learn the development of database
- Student will be able to know querying the data fro database

List of Experiments:

1) Practice DDL Commands: Creation, altering and dropping of tables with out and with Integrity Constraints.
2) Practice DML Commands: Inserting, updating and deleting rows of a table and enforce Integrity Constraints.
3) Queries using DISTINCT, AND, OR, NOT, BETWEEN, LIKE, IS NULL, ORDER BY.
   Example:- Select the roll number and name of the student who secured fourth rank in the class.
4) Queries (along with sub Queries) using ANY, ALL, IN, NOT IN, EXISTS, NOTEXISTS, UNION, INTERSET, MINUS.
5) Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
6) Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add months, last_day, months between, least, greatest, trunc, round, to_char, to_date)

7) i)Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)
   ii)Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
8) Program development using WHILE LOOPS, FOR LOOPS, nested loops.
9) Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
10) Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
11) Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12) Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

II B.Tech II Semester (CSE)	L	T	P	[C]
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(13CS409) TECHNICAL SEMINAR-I

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

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

Course Structure for MBA Regular Programme
Applicable for students admitted from Academic Year 2013-14

MBA I Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Lab	St	IM	EM	Total Marks	
1	13MB101	Principles of Management	4	-	-	40	60	100	4
2	13MB102	Business Environment	4	-	-	40	60	100	4
3	13MB103	Managerial Economics	4	-	-	40	60	100	4
4	13MB104	Corporate Communication	4	-	-	40	60	100	4
5	13MB105	Accounting for Managers	4	-	-	40	60	100	4
6	13MB106	Quantitative Techniques for Management	4	-	-	40	60	100	4
7	13MB107	Organizational Behaviour	4	-	-	40	60	100	4
8	13MB108	I.T. for Managers	-	3	-	40	60	100	2
9	13MB109	Case Study-I	-	-	6	50	-	50	2
		Contact Periods / Week	**28**	**3**	**6**	**370**	**480**	**850**	
		Total Periods / Week	**37**			**Total Credits**			**32**

MBA II Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Lab	St	IM	EM	Total Marks	
1	13MB201	Human Resource Management	4	-	-	40	60	100	4
2	13MB202	Financial Management	4	-	-	40	60	100	4
3	13MB203	Marketing Management	4	-	-	40	60	100	4
4	13MB204	Production and Operations Management	4	-	-	40	60	100	4
5	13MB205	Operations Research	4	-	-	40	60	100	4
6	13MB206	Business Research Methods	4	-	-	40	60	100	4
7	13MB207	Management Information Systems	4	-	-	40	60	100	4
8	13MB208	Soft Skills	3	-	-	40	60	100	2
9	13MB209	Case Study-II	-	-	6	50	-	50	2
		Contact Periods / Week	**31**	**0**	**6**	**370**	**480**	**850**	
		Total Periods / Week	**37**			**Total Credits**			**32**

MBA III Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Lab	St	IM	EM	Total Marks	
1	13MB301	Business Ethics and Corporate Governance	4	-	-	40	60	100	4
2	13MB302	Entrepreneurship Development	4	-	-	40	60	100	4
3	13MB303	Business Law and Regulation	4	-	-	40	60	100	4
4	13MB304 13MB305 13MB306 13MB307	**Elective-I** 1. Financial Institutions, Markets and Services 2.Consumer Behaviour 3.Industrial Relations 4.E-Business	4	-	-	40	60	100	4
5	13MB308 13MB309 13MB310 13MB311	**Elective-II** 1.Security Analysis and Portfolio Management 2.Services Marketing 3.Training and Development 4.Management of Software Projects	4	-	-	40	60	100	4
6	13MB312 13MB313 13MB314 13MB315	**Elective-III** 1.Risk and Insurance Management 2.Sales & Distribution Management 3.Human Resource Development 4.Enterprise Resource Planning	4	-	-	40	60	100	4
7	13MB316 13MB317 13MB318 13MB319	**Elective-IV** 1.Direct Taxes 2.Logistics and Supply Chain Management 3.Leadership and Team Building 4.Datawarehousing and Data Mining	4	-	-	40	60	100	4
8	13MB320	Soft Skills Lab		-	3	40	60	100	2
9	13MB321	Case Study-III	-	-	6	50	-	50	2
		Contact Periods / Week	**28**	**-**	**9**	**370**	**480**	**850**	
		Total Periods / Week	**37**			**Total Credits**			**32**

MBA IV Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Lab	St	IM	EM	Total Marks	
1	13MB401	Strategic Management	4	-	-	40	60	100	4
2	13MB402	International Business Management	4	-	-	40	60	100	4
3	13MB403 13MB404 13MB405 13MB406	**Elective-V** 1.Financial Derivatives 2.Customer Relationship Management 3.Performance and Compensation Management 4.Data Communication and Network Security	4	-	-	40	60	100	4
4	13MB407 13MB408 13MB409 13MB410	**Elective-VI** 1.International Financial Management 2.Brand and Advertising Management 3.Global Human Resources Management 4.Corporate Information Management	4	-	-	40	60	100	4
5	13MB411	Seminar	-	-	3	50	-	50	2
6	13MB412	Case Study-IV	-	-	3	50	-	50	2
7	13MB413	Project Work	-	-	12	80	120	200	10
		Contact Periods / Week	**16**	**-**	**18**	**340**	**360**	**700**	
		Total Periods / Week	**34**			**Total Credits**			**30**

Detailed Syllabus

MBA I Semester	L	T	P	[C]
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(13MB101) PRINCIPLES OF MANAGEMENT

Objective: To familiarize students with the basic management concepts and theories.

UNIT-I:
Management: Definition, Nature and Importance, Goals, Levels of management; Managerial Roles and Functions; Administration vs. Management; Early management Thoughts – Modern approaches to management- Recent Developments; Managing people and organizations in the context of New Era- Managing for competitive advantage - the Challenges of Management.

UNIT-II:
Planning: Nature and Importance, Steps in planning, Types of planning, Levels of planning – The Planning Process – MBO: Process – Advantages and Disadvantages – MBO in Indian Context; Decision making – Significance - Types - Decision making process – Modern Approaches- Evaluating Decisions.

UNIT-III:
Organizing: Nature of organizing- Formal and Informal – Organization levels and span of management- Organizational structure and Process; Departmentation - Modern Organizational Structures – Characteristics; Line and Staff concepts - Delegation, Centralization and Decentralization of Authority;
Staffing: Definition – Human Resource Planning - Principles, Process – Employee Turnover – Recruitment and Selection – Performance Appraisal.

UNIT-IV:
Directing: Meaning, Assumptions of Human Behaviour, Theory X and Theory Y; Leadership: Definition, Dimensions – Leader Vs Manager – Trait approaches to leadership – Leadership Behavior and styles – Recent approaches to leadership; Managerial Grid
Controlling: Nature and importance – Process – Feedback system – Requirements for effective control – Control techniques.

Text Books:

1. Koontz and O'Donnel "**Principles of Management**", Tata McGraw Hill
2. Prasad L M **"Principles and Practices of Management"** , Sultan Chand & Sons, New Delhi

Reference Books:

1. Koontz, Weihrich and Aryasri "**Principles of Management**" Tata McGraw Hill, New Delhi, 2008.
2. Meeenakshi Gupta "**Principles of Management**:", PHI Private Limited, New Delhi, 2009.
3. John F. Wilson **The Making of Modern Management**, **,** Oxford University Press.
4. Daft, "**The New Era of Management**", Cengage Learning, New Delhi, 2009.
5. Stoner, Free man and Gilbert "**Management**",: Pearson Education, New Delhi, 2002
6. Schermerhorn Jr.: "Wiley-India **"Management** ", , New Delhi, 2008.

MBA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MB102) BUSINESS ENVIRONMENT

Objective: To familiarize students with the Domestic and the International Business Environment makes to understand, its implications to Business.

UNIT –I:

Business and Economic Environment Introduction: Concepts, Significance and Nature of Business environment; Elements of environment: Internal and External; Techniques of Environmental scanning and monitoring. **Economic environment of business**: Significance and elements of economic environment; Economic systems and business environment; Economic planning in India; Government policies: Industrial policy, Fiscal policy –Foreign Trade Policy; Economic reforms, Liberalization and structural adjustment programmes.

UNIT –II:

Political and Legal environment of business: Critical elements of political environment; Government and business; changing dimensions of legal environment in India; MRTP & FEMA and licensing policy.

UNIT –III:

Socio – Cultural and Technological environment: Critical elements of socio – cultural environment; Consumerism in India; Technological environment in India; Social Audit, Policy on research and development; Patent laws; Technology transfer.

UNIT –IV:

International and Recent Issues in environment: Multinational Corporations; Foreign collaborations and Indian business; Non-resident Indians and corporate sector. Public sector reforms, consortiums.

Text Book:

1. Francis Cherunilam, **"Business Environment"**, Himalaya Publications- New Delhi, 11th Edition
2. Justin Paul, **"Business Environment"**, McGrawhill, New Delhi, Second Edition

Reference Books:

1. K.V.Sivaiah & V.B.M.Das, "**Indian Industrial Economy"**, S.Chand & Company, New Delhi.
2. Suresh Bedi, **"Business Environment"**, Excel Books, New Delhi,
3. Adhikary.M. **"Economic Environment of Business"**, Sultan Chand & Sons, New Delhi.
4. Chakravarthi., S. **"Development Planning"**, Oxford University Press, Delhi.
5. Ghosh, Biswanth,**"Economic Environment of Business"**, Vikas Publication, New Delhi.
6. Ramaswamy.V.S. and Nama Kumari. S. **"Strategic Planning for Corporate Success"**, Macmillion, New Delhi.

MBA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MB103) MANAGERIAL ECONOMICS

Objectives: Objective of this course is to understand the relevance of economics in business management, to enable the students to understand economic concepts and theories and their application in management decision-making.

UNIT-I:
Introduction to Managerial Economics: Definition, Nature and Scope, Relationship with other areas in Economics, The role of managerial economist - Fundamental economic concepts: Opportunity cost, Discounting principle, Time perspective, Incremental concept, Marginal Utility and Equi-marginal Utility, Risk and Uncertainty.

UNIT-II:
Objectives of the Firm: Profit Maximization, Sales Maximization and other objectives- Structure of the Firm- Demand Analysis: Demand Function, Law of Demand and its exceptions, Elasticity of demand: Types and significance of Elasticity of Demand – Measurement of Price Elasticity of Demand, Factors affecting Elasticity of Demand, Demand forecasting: Forecasting methods, Demand forecasting for New Products, Supply Analysis – supply function, the Law of Supply, Elasticity of Supply.

UNIT-III:
Production Analysis: Production function, Cobb-Douglas Production Function, Iso-Quants, Iso-Costs and Least cost Combination of inputs, MRTS, Laws of Production and Economies of scale. **Cost Analysis**: Cost concepts, short run and long run cost-output relationship; Cost control and its Techniques.

UNIT-IV:
Market Structure and Pricing: Features and types of different competitive situation. Price- Output determination in Perfect competition, Monopoly, Monopolistic competition and Oligopoly. Pricing methods and Strategies. Profit Management: Nature, scope, Theories of profit including modern theory - Measurement policies, Cost – Volume- Profit Analysis.

Text Books:

1. R.L.Varshney and K.L.Maheshwari **"Managerial Economics"**, Sultan Chand & Sons. 17th Edition, G S Gupta, **"Managerial Economics"**, Tata McGraw Hill.

Reference Books:

1. Joel Dean **"Managerial Economics"**, PHI.
2. Henry and Haynes, **"Managerial Economics"**: Analysis and Cases, Business Publications
3. Thomson Keat, **"Managerial Economics"**, 4th Edition, 2007,
4. H. Craig Petersen, W.C. Lewis, S K Jain, **"Managerial Economics"**, Pearson, 2006
5. Mark Hirschey **"Managerial Economics"** — Cengage Learning. 2nd Edition

MBA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MB104) CORPORATE COMMUNICATION

Objectives: The objective of this Course is to understand the importance of soft skills, and to develop the students' competence in communication at an advanced level. Assuming that the students are fairly proficient in the basic communication skills of listening, speaking, reading and writing in English the course aims to train them in communicating efficiently in the workplace and professional contexts.

UNIT -I:
Concept of Communication: Significance – Scope and Functions of Business Communication – Process and Dimensions of Communication – Essentials of Good Communication – Channels of Communication – Formal , Informal Communication – Upward, Downward , Horizontal Communication – Grapevine Phenomenon. Barriers to Communication.

UNIT -II:
Business Correspondence: Principles of Effective Writing; Letter Writing: CVs and Applications; Memoranda; Business Claims and Responses; Business Proposals; Meetings, Agenda and Minutes. Report Writing: Process, Structure and Layout: Types and Formats of Reports.

UNIT -III:
Presentation Skills: Planning, Structure and Delivery: Strategies for Successful Speaking and Listening.
Non-Verbal Communication: Sign language – Body language – Kinesics – Proxemics – Time language and Haptics: Touch language

UNIT -IV:
Telephone and E-mail Etiquette: Basis of Telephone and E-mail Etiquette, Cross- Cultural Issues which Affect Communication across Different Cultures.
Interview: formal – informal – interview techniques – Communication etiquettes.

Reference Books:

1. Lesikar &Flatley, Basic Business Communication--Tata Mc Graw Hill Publishing company Ltd.
2. Urmila Rai & S.M.Raj, Business Communication- -Himalaya Publications
3. Kitty O Locker, Stephen Kyo, "Business Communication" -–Tata Mc Graw Hill Publishing Company Ltd.
4. Meenakshi Raman, Business Communication- Oxford University Press.
5. Raymond V.Lesikar, Neeraja Pandit , Business Communication-–TMH
6. Dr. T.M. Farhatulla, English for Business communication- - Prism Books Pvt Ltd.

MBA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MB105) ACCOUNTING FOR MANAGERS

Objective: The objective of this course is to acquaint the students regarding various Accounting concepts in financial dealings and their applications in managerial decision making.

UNIT -I:
Financial Accounting – Concept, Importance and Scope, Accounting Principles, Journal, Ledger, Trial Balance, Preparation of Final accounts with adjustments, Depreciation (Straight line and Diminishing Balance methods only).

UNIT –II:
Analysis and Interpretation of Financial Statements- Meaning, importance and techniques , Ratio Analysis, Funds Flow Analysis, Cash Flow Analysis.

UNIT –III:
Cost Accounting – Meaning, importance, methods, techniques - classification of cost and preparation of cost sheets and tenders. Inventory valuation - FIFO, LIFO , Simple and Weighted Average methods(Simple problems).

UNIT –IV:
Management Accounting – Concept, need , importance and Scope, Budgetary control – meaning, need, objectives, essentials of budgeting, different types of budgets; standard costing and variance analysis (material and labour only) Marginal costing and its application in Managerial decision making.

Text Books:

1. Dr.S.N.Maheshwari and Dr.S.K. Maheshwari,**"Financial Accounting"**, Vikas Publishing House Pvt.Ltd,
2. Khan, M.Y and Jain. P.K . **"Management Accounting"** ,TMH, New Delhi.

Reference Books:

1. Ambrish Gupta **"Financial Accounting for Management"** Pearson Education.
2. Vijaya Kumar **"Accounting for Management"**, TMH, 2009.
3. Singhal, A.K and Ghosh Ray, H.J. **"Accounting for Managers"**, JB Publishers and Distributors, New Delhi.
4. R.K.Sharma & Shasi .K.Gupta **"Management Accounting"** Kalyani Publishers.
5. Jain S.P. and Narang K.L. **"Advanced cost Accounting"**, Kalyani Publishers, Ludhiana.
6. Robert N. Anthony, David F. Hawkins and Kenneth A. Merchant **"Accounting "- Text and cases** , TMH

MBA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MB106) QUANTITATIVE TECHNIQUES FOR MANAGEMENT

Objective: The objective of this course is to familiarize the students with the statistical techniques popularly used in managerial decision making. It also aims at developing the computational skills of the students relevant for statistical analysis.

- Standard Statistical tables and Calculators to be allowed in the examinations.

UNIT -I:

Quantitative methods : **Meaning and definition of Statistics** – Nature, Scope, Significance of statistics and mathematics – Sources of Data – Types of data – Methods of data collection – Classification and Tabulation of data – Types of Classification and Tables – Rules of classification and tabulation. Frequency Distribution – Importance and different types of graphs and diagrams – Sampling techniques and sources.

UNIT - II:

Statistical Tools:- Measures of Central Tendency: Arithmetic Mean – Weighted mean – Median, Mode – Geometric mean and Harmonic mean – Measures of Dispersion- Range, Quartile Deviation, Mean Deviation, Standard Deviation, Coefficient of Variation – Application of measures of central tendency and Dispersion for Business decision making.

UNIT -III:

Correlation and Regression Analysis: Correlation- Introduction -Types and Methods- Probable error. **Regression**- Regression Lines, Methods of Regression, Correlation Vs Regression, Correlation Vs Determination- Computation of Correlation through Regression.

UNIT - IV:

Time Series & Index Numbers: Time series, utility of Time series, components of Time series. Measurement of Trend - Graphic method , Semi Averages method, Moving Averages and Method of Least Squares - Index Numbers- construction of Index Numbers, simple and weighted index numbers, Laspeyre's Index, Paasche's Index, Fisher's Ideal Index, Cost of Living Index, Time Reversal and Factor Reversal tests.

Text Books:

1. S C Gupta **"An Introduction to Statistical Methods"** Vikas Publishing House Hyd.
2. S.P. Gupta , **"Statistical Methods"** S.Chand & Co.

Reference Books:

1. S C Gupta , **"Fundamentals of Statistics"**, Himalaya publications,6th edition.
2. Gupta S.C & Indra Gupta **"Business Statistics",** Himalaya Publishing House, Mumbai.
3. M.P.Gupta **"Quantitative Techniques for Decision Making"** PHI, 2009.
4. Sancheti & Kapoor **"Statistical Methods"** Sultan chand & Son's.
5. Richard I Levin, David S.Rubin **"Statistics for Management"** Pearson, 2008
6. Amir D. Aezel, Jayavel **"Complete Business Statistics"**, TMH, 2008

MBA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MB107) ORGANIZATIONAL BEHAVIOUR

Objective: Objective of the course is to give the students with the conceptual framework and the theories underlying Organizational Behavior.

UNIT –I:

Foundations of Human Relations and Organizational Behavior. Early approaches in Management. Definitions, nature and scope of Human Relations and Organizational Behavior and its significance. Contributions of other Disciplines.

UNIT –II:

Learning: Understanding behavior as Input-Output systems of the Traditional and Behavioral perspectives, Learning theories. Reinforcement and Behavioral steps into Organizational Behavior model, process.

Perceptual Management and Personality: Meaning and significance of Perception and influencing factors. The Gestalt perceptual organization and social perception. Impression management, linkage between Perception and Individual decision making- Meaning of personality. Personality Traits and Determinants. Personality development and socialization.

UNIT –III:

Groups: Nature of Groups. Dynamics of Group formation, Types of groups. Implications of Group Dynamics on organizational Behavior and Management. Stages of Group Development. Group structure, Dynamics of informal groups and their significance. Definition of Work Teams, Team effectiveness.

Power, Authority, Influence and Leadership: Definition and meaning of power, Distinction between Power, Authority and Influence bases of power, the process of power. Definition of Leadership. Traits of Effective Leaders, Leadership Skills, Leadership theories, Leadership styles and Determinants.

UNIT –IV:

Organizational Development: Organizational Development and its Techniques, Team interventions, pre-requisites and steps.

Meaning of Conflict, Classification of conflict, process, negotiation and its process, Collective Bargaining and its process, Approaches to Conflict Management, Bases of collaboration, Interventions for Collaborations.

Text Books:

1. Robbins.P. Stephen, **"Organizational Behaviour"**, Pearson education, 2006.
2. Aswathappa. K., **"Organizational Behaviuor" - Text and Cases games**, Himalaya Publishing Company, 2005

Reference Books:

1. Luthans Fred, **"Organizational Behaviour"**, Tata Mc Graw Hill International Edition, 1998
2. Pareek Udai , **"Understanding Organizational Behaviour"**, Oxford University Press.2007
3. Jerald Greenberg and Robert.A. Baron, **"Organizational Behaviour"**, PHI , 2009
4. Jit.S. Chandhan, **"Organizational Behaviour"**, Vikas Publishing House, 2006

MBA I Semester	L	T	P	[C]
	0	0	3	[2]

(13MB108) I.T. FOR MANAGERS

Objectives:- The IT Workshop for Management Students, is a training lab course spread over 40 hours. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word processor, Spread sheet, Presentation, Relational Database and Computerized Accounting Tally Lab.

PC Hardware:-

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

Exercise 2: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Internet & World Wide Web:-

Exercise 3: Students should get connected to the Local Area Network and access the Internet. Students should demonstrate to the instructor, how to access the websites and email.

Exercise 4: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

Word processor:-

Exercise 5: The mentor needs to give an overview of Microsoft word 2007: Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word. Give a task covering to create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Inserting table, using Drawing toolbar in word.

Exercise 6: Mail merge concept. Create data base/ table of addresses to merge the Document for mailing purpose

Exercise 7: Exercises on tables

Spread sheet:-

Exercise 8: The mentor needs to tell the importance of MS office 2007 Excel as a Spreadsheet tool covering Accessing, overview of toolbars, saving excel files, Using help and resources., Also give a task that is covering the features like Gridlines, Format Cells, Summation, Auto fill, Formatting Text.

Exercise 9: Example on usage of different functions.

Exercise 10: Examples to create different types of charts (Pie, bar, line etc.)

Presentation:-

Exercise 11: Students will be working on MS power point that helps them create basic power point presentation. Topics covered during this Exercise include :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in Power point. Students shall be given a model power point presentation which needs to be replicated (exactly how it's asked).

Relational database:-

Exercise 12: Introduction to data bases (Examples using MS Access)

References:

1. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dream tech
2. The Complete Computer upgrade and repair book,3rd edition Cheryl A Schmidt, WILEY Dreamtech
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. PC Hardware and A+Handbook – Kate J. Chase PHI (Microsoft)
5. LaTeX Companion – Leslie Lamport, PHI/Pearson.
6. IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinson and Ken Quamme. – CISCO Press, Pearson Education.
7. IT Essentials PC Hardware and Software Labs and Study Guide Third Edition by Patrick Regan – CISCO Press, Pearson Education.
8. Troubleshooting,Maintaining and Repairing PCs,S.J.Bigelow,5th edition,TMH.

COMPUTERIZD ACCOUNTING TALLY LAB

Objectives: To make the student to implement the common accounts problems with the software called Tally.

EXPERIMENTS LIST:

1. Creation of company, Accounts Configuration, Classification of Accounts using Tally.
2. Accounts Masters, Accounts Voucher - Voucher Entry, conversion, Interest Calculation, Printing of voucher using Tally.
3. Create a Contra Voucher, Payment and Receipt Voucher using Tally.
4. Create Sales and Purchase Voucher, Credit notes and Debit notes using Tally.
5. Create Trading Account, Profit / Loss Account, Balance Sheet using Tally.

Text books:

1. Dinesh Maidasani , Accounting with Tally 9.0, ,Laxmi publications.
2. Namrata Agrawal , Financial Accounting on Computers Using Tally.

MBA I Semester	L	T	P	[C]
	0	6	0	[2]

(13MB109) CASE STUDY-I

Objective: Objectives of the course are to enhance analytical and logical thinking capabilities of the student, to improve the communication and presentation skills of the student and to enable the student understand the process of problem analysis, identifying appropriate solutions with respect to the concepts of the subject.

Total sessions in a semester shall be distributed for all the subjects. The concerned teaching staff shall select the cases of recent origin for discussion.

Internal evaluation (50 marks): Case studies are conducted in atleast 5 subjects out of total 7 subjects. At least two cases per subject shall be considered for internal evaluation. Such case study analyses by student shall be produced as a record. Case studies for each subject are allotted 10 marks awarded by the concerned subject faculty and Head of the Department. The Head of the Department shall consolidate the marks of all such case studies and finalize the internal evaluation marks for 50.

Reference Books:

1. ICMR – ICFAI Case Management Research
2. **"Case study in each subject"** – Srinivasan
3. **"Business India"** – Magazine contains case study analysis.

MBA II Semester	L	T	P	[C]
	4	0	0	[4]

(13MB201) HUMAN RESOURCE MANAGEMENT

Objective: The objective of the course is to provide basic knowledge of functional area of Human Resource Management. This will be the prerequisite for enabling students to take any HRM stream electives offered in third and fourth semesters.

UNIT -I:

Introduction to HRM- Objectives of HRM, HRM functions, Challenges of HRM- Job analysis and job design- Uses of Job Analysis, Job Description and Specifications, Ergonomics , HR planning . Process of HRP, Recruitment – Sources, Techniques, Selection - Procedure, Placement & Induction

UNIT- II:

Training & Development: HR Development – Concept of HRD, Scope, Need , Objectives, Functions of HRD Managers, Employee Training - Introduction to Training , Training Process, Training Methods, Management Development – Individual, Group, Organizational Techniques, Evaluation of T&D, Career Planning & Development

UNIT -III :

Performance appraisal & Compensation: Performance Appraisal: Meaning, Need, Purpose and Objectives , Appraisal Process, Methods of Performance Appraisal, Appraisal Interview and Feedback Interview , Compensation: Objectives, Influences on Compensation, Compensation & on System – Simple Ranking, Job Grading, Point System and factor comparison System.

UNIT -IV:

Integration: Quality of Work life, Industrial Relations, Trade unions- Functions and Role of Trade Unions, Objectives of important Indian Trade Unions, Union Structure, Problems of Trade Unions, Industrial Conflicts, Collective Bargaining, Grievance Handling, Quality Circles.

Text Books:

1. Biswajeet Pattanayak, **"Human Resources Management"** – PHI, 3rd Edition
2. K. Ashwathappa, **"Human Resources & Personnel Management"** - Tata Mc Graw Hill & CO. 3rd edition.

Reference Books:

1. P.Subbarao , **"Personnel and Human Resource Management"** - Himalaya Publication
2. P.Subba Rao**, "Essentials of HRM & Industrial Relations"** –Himalaya
3. Dr. Tripathi P.C , **"Personnel Management & Industrial Relations"** - Sultan Chand & Sons, 19th edition,2008.
4. Gary Dessler, **"Human Resource Management"** - Pearson, 9th edition. 2003
5. Edwin Flippo, **" Principles of Personnel Management"** - Prentice Hall inc,1st edition, 1984.
6. Mamoria & Gankar S.V, **" Personnel Management & Industrial Relations"** - Himalaya Publishing House ,29th edition, , 2009.

MBA II Semester	L	T	P	[C]
	4	0	0	[4]

(13MB202) FINANCIAL MANAGEMENT

Objective: The objective of this course is to acquaint the students with Financial Management Tools and Techniques in Financial decision making.

UNIT –I:

Financial Management: Scope, Finance function and its Organization, Objectives of Financial Management; Time value of money, sources of long term finance.

UNIT –II:

Capital Budgeting: Meaning , Features, Importance, Difficulties in determining cash flows, methods of capital budgeting; Risk analysis in capital budgeting- Different methods- Cost of Capital of different sources of capital; weighted average cost of capital and marginal cost of capital.

UNIT –III:

Capital Structure and Leverage: Capital Structure -meaning, features, factors, approaches. Operating leverage, financial leverage and Combined leverage. Capital Structure Theories – NI, NOI, Traditional and M-M Theories; Dividend Policy- determinants of dividend Policy– Dividend Theories- M-M Theory, Walter Theory, Gordon Theory and Linter's Theory.

UNIT –IV:

Working Capital Management: Meaning, need, determinants; estimation of working capital requirements; Management of cash, Inventories & Receivables (Theory and Problems). An overview of Corporate Restructure- Corporate Mergers and Acquisitions and Takeovers – types of Mergers, motives for mergers.

Text Books:

1. Dr.S.N.Maheshwari, **"Management Accounting and Financial Control"** – Sultan Chand &Sons.
2. Sudhindra Bhat, **"Financial Management "–Principles and Practice** –Excel Books, 2nd edition.

Reference Books:

1. Dr. Prasanna Chandra, **"Financial Management"** –TMH , New Delhi.
2. I Vikas – **"Financial Management"** - Publishing House, New Delhi.
3. Khan M.Y and Jain P.K, **"Financial Management"** - Tata Mcgraw Hill, New Delhi
4. Van Horn, James c., **"Financial Management and Policy"** - Prentice Hall of India.
5. Khan, M.Y and Jain, P.K- **"Management Accounting"** - TMH, New Delhi.
6. Kishore, R., **"Financial Management "**- Temans Publishing House, New Delhi.

MBA II Semester	L	T	P	[C]
	4	0	0	[4]

(13MB203) MARKETING MANAGEMENT

Objective: The objective of the course is to have the basic concepts of marketing which is one of the important areas of functional management. This is a pre-requisite for taking up any elective paper in 3rd and 4th semester in the stream of Marketing.

UNIT -I:

Introduction to Marketing: Definition of Marketing - Core Concepts of Marketing: Needs, Wants, Demands, Products, Exchange, Transactions, Market, Marketing - Marketing Concepts / Orientations: Production Concept, Product Concept, Sales Concept, Marketing Concept, Societal Market Concept- Indian Marketing Environment.

UNIT –II:

Market Segmentation and Targeting: Identification of Market Segment- Segmenting Consumer Markets - Selecting Target Markets- Segmentation and Targeting as a Basis for Strategy Formulation- Developing and Communicating a Positioning Strategy.

UNIT –III:

Product Management and New Product Development: Marketing Mix – Constituents of a Product - Product Mix and Product Line – Classification of New Products -New Product Development - Product Life Cycle & PLC as a tool for Marketing strategy - Packaging - Branding.

UNIT –IV:

Pricing, Promotion and Distribution Management: Objectives of Pricing-Pricing Methods-Marketing Communication Process- Integrated Marketing Communication– Media Selection – Sales Promotion techniques- - Distribution Channels-Marketing Control Techniques- Dynamics of Channel Management- VMS,HMS-Direct Marketing

Text Books:

- Phillip Kotler, **"Marketing Management"** - Pearson, 14th edition 2013
- V.S. Ramaswamy and S. Namakumari, **"Marketing Management"** - McMillan,3rd edition, 2003.

Reference Books:

1. Rajan Saxena – **"Marketing Management"** - TMH, 2008.
2. The Core, Kerin, Hartley and Rudelius, - **"Marketing"** –McGraw Hill, Irwin, 2007.
3. Srinivasan, **"Case Studies in Marketing"- The Indian Context"** - PHI, 2009
4. Lamb, Hair and McDaniel, **"Marketing"** - Thomson Publishers,7th edition, 2006.
5. Etzel, Walker, Stanton, Pandit , **"Marketing" – concepts and Cases**, TMH, 2008
6. Adrian Palmer, **"Introduction to Marketing theory and practice"** - Oxford University Press

MBA II Semester	L	T	P	[C]
	4	0	0	[4]

(13MB204) PRODUCTION AND OPERATIONS MANAGEMENT

Objective: The Objective of the course is to enable students to understand the production Planning and Controlling aspects of a typical production and operations organization. To understand the concepts of work study and Quality management.

UNIT -I:

Introduction to POM: - Over view of Production & Operations Management, Functions , Historical development of POM, POM scenario today. **Product and Process Design**: Product & Process Development, Manufacturing Process Technology, CAD/ CAM.

UNIT - II:

Facilities Management: Location of Facilities, Layout of Facilities, Classification of Layout and Flexible Manufacturing. **Aggregate Planning:** Preparation of aggregate demand Forecast, Determination of optimal production strategy.

UNIT -III:

Scheduling: Scheduling In Job, Shop Type Production, Assignment and Sequencing, Scheduling In Mass, Continuous and Project Type Production. **Work Study**: Method study, Work measurement, Job Design, Industrial Engineering Techniques

UNIT -IV:

Productivity and Quality management: - Productivity Cycle, Productivity Engineering and Management, Total productivity model. **Quality management**- Economics of Quality Assurance, Inspection and Quality Control, Acceptance Sampling, Total Quality Management – ISO 9000 series standards, Six Sigma.

Text Books:

1. R.Panneerselvam, **"Production and Operations Management"** - PHI Learning private Ltd
2. Aswathappa.K - **"Production and Operation Management"**- Himalaya publishing house, Mumbai

Reference Books:

1. Upendra-Kachru, **"Production and operations management"** –Excel books,New Delhi
2. S N Chary, **"Production and Operations Management"** - Tata McGraw Hill, New delhi,2008
3. Chase, Aquilano, Jacobs – **"Operations management for competitive advantage"** - Tata McGraw Hill
4. Elwood S.Buffa and Rakesh k.Sarin, **"Modern production/operations management"**- Wiley India
5. Mahadevan, **"Operations Management"** - Pearson, New Delhi.

MBA II Semester	L	T	P	[C]
	4	0	0	[4]

(13MB205) OPERATIONS RESEARCH

Objective: The objective of the course is to provide the basic tools of Operations Research in solving the management problems through modeling and using mathematical approach.

UNIT - I:
Concept of Operations Research: Meaning and Models in OR- utilization of OR models for managerial decision making. Linear programming problems, graphical and simplex methods.

UNIT - II:
Transportation & Assignment problem: Definition and application of transportation problem solution of the transportation problem, the assignment model, travelling salesman problem.

UNIT - III:
CPM & PERT and Sequencing: Network analysis – CPM – Network diagram construction, identification of critical path, PERT- calculations of estimated time, standard deviation and probability. Sequencing - sequencing of 'n' number of jobs on two, three machines, two jobs on 'n' machines.

UNIT - IV:
Game Theory : Introduction , two person zero sum game, pure strategy, game with saddle point - mixed strategies , Rules of Dominance solution methods of games without saddle point- Algebraic, Arithmetic Methods for m x n games & Goal programming Concepts- Single Goal Models and Multiple Goal Models – Multiple Goal Models with priorities and weights –Formulation and methodology of Goal Programming Models (Simple Problems).

Text Books:

1. SD.Sharma , **"Operations Research"** - S.Chand
2. J. K. Sharma **"Operations Research" - Theory and Applications** - Macmillan India, 2007

Reference Books:

1. Premkumar Gupta, Hira, **"Operations Research"**, - S.Chand, 2008
2. Hamdy, A.Taha, **"Operations Research" - An Introduction**, - Person Education.
3. Kanthi Swarrop , **"Operations Research"** - S.Chand.
4. Barry Render, Ralph M. Stair, Jr. Michael E.Hanna, **"Quantitative Analysis for Management"**-PHIPvt.Ltd NewDelhi, 9th edition , 2007.
5. N.D.Vohra ,**"Quantitative Techniques in Management"** - TMH, New Delhi, 2007
6. Winston,**" Operations Research",** -Cengage, 2008

MBA II Semester	L	T	P	[C]
	4	0	0	[4]

(13MB206) BUSINESS RESEARCH METHODS

Objective: The Objective of the course is to have a general understanding of statistics as applicable to business and its use in areas of Business Research. The Course addresses the Methods of Research with an emphasis on various stages that are necessary to obtain and process information to enable well informed decision-making. It allows the students to grasp and comprehend the methods and techniques used in Research and provide the knowledge and skill to undertake Research.

UNIT –I:

Introduction: Business Research: Definition-Types of Business Research. Scientific Investigation: The Building Blocks of Science in Research**. The Language of Research**: Concepts, Constructs, Definitions, Variables, Propositions and Hypotheses, Theory and Models. Role of Business Research in Managerial Decisions.

UNIT –II:

The Research Process: Problem Identification: Broad Problem area-Preliminary Data gathering. Literature Survey - Online Data Bases Useful for Business Research - Problem Definition- Theoretical Framework- -Components of Theoretical Framework - Hypothesis Development. **The Research Design:** Types of Research Designs: Exploratory, Descriptive, Experimental Designs and Case Study - Measurement of Variables- Operational Definitions and Scales-Nominal and Ordinal Scales- Rating Scales- Ranking Scales- Reliability and Validity-

UNIT –III:

Collection of Data Sources of Data-Primary Sources and Secondary Sources of Data - Data Collection Methods- Interviews: Structured Interviews and Unstructured Interviews-Face to Face and Telephonic Interviews. **Observational Surveys:** Questionnaire Construction: Organizing Questions-Structured and Unstructured Questionnaires – Guidelines for Construction of Questionnaires.

UNIT -IV:

Data Analysis: An overview of Descriptive, Associational and Inferential Statistical Measures- Hypothesis testing: T-test, F-test, Chi-square test(Theory and Problems). **The Research Report**- Guidelines for Preparing a Good Research Report- Oral Presentation- Deciding on the Content- Visual Aids- Handling Questions

Text Books:

1. C.R.Kothari, Vishwaprakashan – **"Research Methodology" – Methods, Techniques**, New Delhi.
2. Uma Sekharan – **"Research Methods for Business", A Skill Building Approach** - John Wiley &Sons (Asia) Pvt.Ltd, Singapore, 2003.

Reference Books:

1. Donald R Cooper and Pamela S Schindler **"Research Methods"** - Tata McGraww Hill Publishing Company Limited, New Delhi,9th edition, 2009

MBA II Semester	L	T	P	[C]
	4	0	0	[4]

(13MB207) MANAGEMENT INFORMATION SYSTEMS

Objective: The objective of the course is to provide the basic concepts of Information Systems and its development process, implementation and a study on real time application process.

UNIT- I:

Introduction - Definition, Characteristics, Subsystems of MIS (Activity and Functional subsystems), Structure of MIS; Reasons for failure of MIS.

Decision Support System (DSS) - Definition, Relationship with MIS, Evolution of DSS, Characteristics, classification, objectives, components, applications of DSS, GDSS.

UNIT -II:

Developing MIS Systems - System Development Life Cycle. , Investigation Phase, Prototyping, Feasibility Analysis, System Analysis (DFD and ER Diagram), System Design, Implementing Business Systems, Testing, Documenting, Training, Conversion and Maintenance. Pitfalls in MIS Development.

UNIT -III:

E-commerce / E-business - Overview, Definitions, Advantages and Disadvantages of E-commerce Business models of E-commerce: models based on transaction party (B2B, B2C, B2G, C2B, C2C, E-Governance), models based on revenue models, Risks of E-commerce and security measures.

UNIT -IV:

Real Time Application in Business - Types of Real Time Systems, Distinction between Real Time, On – line and Batch Processing System. Real Time Applications viz. Railway / Airway / Hotel Reservation System, ATMs, EDI Transactions - definition, advantages, examples; Electronic Fund Transfer (EFT).

Text Books:

1. Waman S Jawadekar, **"Management Information Systems"** - TMH.
2. Murthy CSV, **"Management Information Systems"** ,Himalaya

Reference Books:

1. James A O'Brien,George M Marakas, Ramesh Bhel "Management Information Systems"- TMH.
2. Loudon and Loudon " Management Information System" Prentice Hall/Pearson Education
3. Joseph, P.T "E-commerce - An Indian Perspective", PHI
4. Westland & Clark "Global Electronic Commerce", Universities Press
5. P. Mohan "Management Information Systems" (Himalaya)

MBA II Semester	L	T	P	[C]
	3	0	0	[2]

(13MB208) SOFT SKILLS

Objective(s): The objective of this Course is to understand the importance of soft skills, and to develop the students' competence in communication at an advanced level. Assuming that the students are fairly proficient in the basic communication skills of listening, speaking, reading and writing in English the course aims to train them in communicating efficiently in the workplace and professional contexts.

UNIT – I:

Verbal And Non-Verbal Communication Skills: Introduction; Listening to Customers, Team Members and Managers; Listening to Electronic Media; Communication with Customers, Team Members and Managers, Referencing for Verbal Communication.

UNIT – II:

A) **Interpersonal Skills**: Definition; Understanding, Analysis and Response to the Needs, Requirements and Capabilities of People at Different Levels.

B)**Goal Setting Skills**: Introduction; Relevance of SWOT Analysis on Goal Setting; Setting Career Goal; Action Plan and Measures to Achieve Career Goal; Corporate Role Models; Three to Five Years Career Roadmap; Competitive Work Environment and Realization of Goals; Anticipating Challenges and Utilizing Opportunities.

UNIT –III:

A**) Time Management Skills**: Planning, Scheduling, Prioritizing; Multitasking.

B) **Corporate Etiquette:** Customer Interaction Etiquette: Meeting Etiquette; Telephone Etiquette; Presentation Etiquette.

C**) Selling skills**: Prospecting, Presenting, Negotiating, Objection Handling and Closing.

UNIT –IV:

Presentation Skills & Body Language: Presentation Skills –Stages Involved in an Effective Presentation, Selection of Topic, Content, Aids, Engaging the Audience, Time Management, Feedback, Mock Presentations

Reference Books:

1. Adler, Communicating at work –principles and practices for Business and professions, Tata Mc Graw Hill Company, 9 th Edition
2. Biswajit Das & Ipseeti satpathy, Business Communication and Personality Development, The Encel Publications, 1st Edition.
3. Hynes, Managerial Communication-Strategies And Applications, The Mc Graw Hill Company,4th Edition.
4. Murphy, Effective Business Communication ,The Mc Graw Hill Company.
5. Aruna Koneru, Professional Communication, The McGraw Hill Company

MBA II Semester	L	T	P	[C]
	0	6	0	[2]

(13MB209) CASE STUDY-II

Objective: Objectives of the course are to enhance analytical and logical thinking capabilities of the student, to improve the communication and presentation skills of the student and to enable the student understand the process of problem analysis, identifying appropriate solutions with respect to the concepts of the subject.

Total sessions in a semester shall be distributed for all the subjects. The concerned teaching staff shall select the cases of recent origin for discussion.

Internal evaluation (50 marks): Case studies are conducted in atleast 5 subjects out of total 7 subjects. At least two cases per subject shall be considered for internal evaluation. Such case study analyses by student shall be produced as a record. Case studies for each subject are allotted 10 marks awarded by the concerned subject faculty and Head of the Department. The Head of the Department shall consolidate the marks of all such case studies and finalize the internal evaluation marks for 50.

Reference Books:

1. ICMR – ICFAI Case Management Research
2. "**Case study in each subject"** – Srinivasan
3. **"Business India"** – Magazine contains case study analysis.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB301) BUSINESS ETHICS AND CORPORATE GOVERNANCE

Objective: The objective of the course is to make students aware of ethical and moral issues concerning business both in Indian and International context and develop sensitivity of students for right ethical practices in conduct of business, to understand the principles of corporate governance, to know the social responsibility of the Corporate.

UNIT -I:
Introduction to Business Ethics: Ethical theories and Approaches, Importance of Ethics in Business, Modern Decision Making, Models for Decision Making.

UNIT -II:
Ethical Issues in HRM & Marketing: Ethics in Selection, Training &Development, Ethics at workplace and performance appraisal. Advertising Ethics, Ethics in Business Competition

UNIT -III:
Ethical Issues in Finance & IT: Insider trading, ethical investment, combating Frauds, Information Security and Threats, Intellectual Property Rights, Cyber crime – Right to information Act.

UNIT IV:
Corporate Governance: Purpose – theories and practice of corporate governance, Indian model of governance- good corporate governance-land marks in emergence of governance, various committee reports on corporate governance. Corporate Social Responsibility- Stakeholders, Environment, Social Development.

Text Books:
1. C.S.V. Murthy **"Business Ethics"** - Himalaya,
2. Fernando, **"Business Ethics" - An Indian perspective**, Pearson Education, 2009

Reference Books:
1. Bob tricker, **"Corporate Governance"** - Oxford, 2009.
2. Balachandran chandrasekharan, **" Corporate Governance and social responsibility"** - PHI
3. Weiss , **"Business Ethics" - concepts and cases** - cengage 2009.
4. Satish Modh, **"Ethical Management"** - McMillan,
5. Laura p Hartman, **"Perspectives in Business Ethics "**, Tata McGraw Hill, 2nd edition.
6. Jayashree sadri, Dastoor, Jaico, **"The Theory and practice of Managerial Ethics"** ,2008.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB302) ENTREPRENEURSHIP DEVELOPMENT

Objective: The objective of the course is to make students understand the nature of entrepreneurship, and its importance to business.

UNIT -I:

Entrepreneurship: Concept of Entrepreneurship-characteristics-types of Entrepreneurs-theories of entrepreneurship- importance of Entrepreneurship, distinction between an Entrepreneur and a Manager, role of entrepreneurship in economic development-Evaluation of Entrepreneurship-successful entrepreneurs.

UNIT -II:

Forms of Entrepreneurship and Aspects of Promotion: Small Business and Importance in Indian Economy, Types of Ownership, Sole Trading, Partnership, Important features of various types of business, Corporate Entrepreneurship, Intrapreneurship – Role of Government in the promotion of Entrepreneur, State Enterprises in India. Idea generation- Opportunities, SWOT Analysis – Patents and Trade marks, Intellectual property rights.

UNIT -III:

Women and Rural Entrepreneurship: Concept of Women Entrepreneurship- Functions- Growth of Women Entrepreneurship – Problems of Women Entrepreneurship- Women ED Programs - development of Women Entrepreneurship In India - Recent trends. Need of Rural Entrepreneur in industrialization- problems of Rural Entrepreneurship- developing of Rural Entrepreneurship- NGO's and Rural Entrepreneur. MSME: Characteristics, Role, Problems, Government Policies to support Rural Enterprises. Need, objectives and phases of EDPs.

UNIT - IV:

Finance to Enterprise: Need for finance planning- Sources of Finance. Capital structure- Venture Capital-seed money- Institutional Finance to Entrepreneur- Institutional support to MSME. Role of MSME in Economic Development.

Text Books:

1. Vasanth Desai **"The Dynamics of Entrepreneurial Development and Management"** Himalaya,2009.
2. Bholanath Dutta, " **Entrepreneurship Management" – Text and Cases**, Excel Books, 2009

Reference Books:

1. S.S. Khanka, **"Entrepreneurial Development",** S. Chand and Company Limited New Delhi, 2009.
2. H. Nandan , "**Fundamentals of Entrepreneurship"** PHI, First/e, New Delhi, 2009.
3. Robert D Hisrich, Michael P Peters, Dean A Shepherd, **"Entrepreneurship"**, TMH,6th edition,2009.
4. Holt, **"Entrepreneurship" – New venture Creation**, PHI, 2009.
5. Roy, **"Entrepreneurship"** , Oxford 2009.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB303) BUSINESS LAW AND REGULATION

Objective: The objective of the course is to enable students understand the legal framework of business.

UNIT- I:
Law of Contract -1872: Nature of contract and essential elements of valid contract, Offer and acceptance, Consideration, Capacity to contract and free consent, legality of object – Breach of contract and discharge of contract.

UNIT- II:
Sale of Goods Act 1930 & Consumer Protection Act 1986: General Principles, Conditions and Warranties Performance of Contract of sale, Consumer Protection Act 1986.

UNIT -III:
Companies Act -1956: Kinds of companies, Formulation of companies, Incorporation, Company Documents, Company Management, Directors, Company Meetings, Resolutions, Auditors, and Modes of Winding- up of a company.

UNIT- IV:
Income Tax Act -1961 & Central Excise Act 1944: Terminology of Residential Status, Incidence of Tax, Heads of income, Computation of Total Taxable Income and Tax, Tax Schedules, Tax Deducted at Source. Central Excise Act 1944: Basic Concepts related to excisable goods, Classification of goods and Basic Concepts of VAT.

Text Books:
1. N.D. Kapoor (2009) ,**" Mercantile Law"**, Sultan Chand & sons , New Delhi.
2. S.S .Gulshan, **"Mercantile law"**- Excel Books,3rd edition.

Reference Books:
1. S.N Maheswari & Maheswari ,**"A Manual Business Law"** -, Himalaya, 2008.
2. B.B. Lal, **"Income Tax and Central Tax: Law and Practice"**, Person Education.
3. Mathur, **"Business law"**, TMH 2009
4. Chandra Bose, **"Business Law"**, PHI 2008

Grag, Sareen, Sharma, Chawla, **"Mercantile law"**, Kalyani 2009

MBA III Semester

	L	T	P	[C]
	4	0	0	[4]

(13MB304) FINANCIAL INSTITUTIONS, MARKETS AND SERVICES (ELECTIVE-I)

Objective: The objective of the course is to provide the students an understanding of Financial Markets, the major institutions involved and the services offered within this framework.

UNIT - I:

Financial System, Regulatory and Promotional Institutions: Financial System and Economic Development, Financial Sector reforms, Regulatory and Promotional Institutions: Functions and Role of RBI, Monetary policy and techniques of monetary control of RBI. The Role and Functions of SEBI

UNIT -II:

The Banking and Non-Banking Financial Institutions: The public and private sectors, structure, Bank capital and Banking Innovations, Commercial and Co-operative Banks , Non-Banking Financial Institutions - Mutual Funds, Growth of Indian Mutual Fund and its Regulations, The Role of AMFI, Insurance Companies – Role of IRDA.

UNIT -III:

Financial Markets and Securities Markets: Structure and Functions of Call Money Market, Government Securities Market, Treasury Bills Market, Commercial Bills Market, Commercial Paper and Certificates Of Deposits, Securities Markets-Organization and Structure, Listing, Trading and Settlement, SEBI and Regulations of Primary and Secondary Markets.

UNIT - IV:

Financial Services: Asset/Fund Based Financial Services - Lease Finance, Consumer Credit And Hire Purchase Finance. Factoring - Definition, Functions, Advantages, Evaluation And Forfeiting, Bills Discounting, Housing Finance, Venture Capital Financing. Fee-based / Advisory services: Stock Broking, Credit Rating.

Text Books:

1. L. M. Bhole **"Financial Institutions and Markets",**Tata McGraw Hill, 4th edition 2007.
2. Mishkin, **"Financial Markets and Institutions"**, Pearson Education, 6th edition, 2008.

Reference Books:

1. Gorden & Natarajan **,"Financial Services"** Himalaya publishers. 2009.
2. Jeff Madura, **"Investment Institutions and Markets"**, Cengage, 1st Edition, 2009.
3. Thirpati , **"Financial Services"**, PHI, 2009
4. Meir Kohn , **"Financial Institutions and Markets"** Oxford University Press, 2007.
5. Vasanth Desai **"Financial Markets & Services",** Himalaya, 2009.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB305) CONSUMER BEHAVIOUR
(ELECTIVE-I)

Objective: To impart the student with the analytical concepts and to understand the Behavior of a Consumer.

UNIT -I:
Introduction to the Study of Consumer Behaviour – Inter Disciplinary Approach; Consumer and Marketing Strategy –Methods of Consumer Research, Diversity of Consumers and their behaviours; Profiling the consumer and understanding their needs; Determinants of Consumer Behaviour – Profile of the Indian Consumer.

UNIT -II:
Consumer needs: Theories of Motivation and their applications. Process theories and content theories. Personality and self concept. Theories of personality. Trait theory and measurement. Motivational Research. **Perception** – Nature of Perception – Perception and Marketing Strategy; Motivation – Motivation Theory and Marketing Strategy; Personality and Emotion

UNIT- III:
Learning and Consumer Behaviour- Learn ing theories: Behavioural Learning Theories-Classical Conditioning, Instrumental Conditioning, Cognitive Learning Theory, Involvement Theory ,Brand loyalty, Brand extensions.
Attitudes and Attitude Change; Concept and measurement of attitudes. Strategies of attitude change.. Attribution theory and Cognitive dissonance. Persuasion and persuability,.

UNIT -IV:
Consumer Decisions Process – Problem Recognition – Information Search – Evaluation Alternative and Selection – Post Purchase Behaviour – Organizational Buyer Behaviour Attitude, Measurement and Change; Self Concept and Life Style Marketing, Segmentation – Consumer decision making process, Evaluative Criteria and decision rules;

Text Books:

1. Leon G. Schiffiman and Leslie Hazer Kanuk., **Consumer Behaviour** - Pearson Education. Asia: 2008.
2. Henry Assael., Willey **Consumer Behaviour** - India. New Delhi.

Reference Books:

1. Jagadish N. Seth, Atul Parvatirao and G. Shainesh.,**Customer Relationship Management: Emerging Concepts, tools and applications -** Tata Mc Graw Hill Publications. New Delhi: 2001.
2. Mukesh Chaturvedi and Abhinav Chaturvedi - **Customer Relationship Management: An Indian perspective** -,. Excel Books.
3. Marshall **- Consumer Behaviour –** Himalaya**.**
4. Schiffman, L G and Kanuk, L L,**" Consumer Behaviour"**, Prentice Hall of India, 1994

MBA III Semester

	L	T	P	[C]
	4	0	0	[4]

(13MB306) INDUSTRIAL RELATIONS
(ELECTIVE-I)

Objective: The objective of this course is to sensitize and expose students to critical tasks, functions and issues of industrial relations and to gain insight into the dynamics of employee management relations on the different job situations.

UNIT -I:

Industrial Relations: Concept, Scope, Objectives, emerging socio-economic and techno-economic profile; Impact of technological change on Industrial Relations; Role of State in managing industrial relations - Factors affecting Industrial Relations.

UNIT -II:

Trade Unions: Introduction, Definition and objectives, growth of Trade Unions in India. Trade Unions Act, 1926 and Legal framework, Union recognition, Union problems, Employees Association – Introduction, Objective, Membership, and Financial Status.

UNIT- III:

Labour Legislation: Factories Act 1948; Contract Labour (Regulation and Abolition) Act 1970, Workmen's Compensation Act, 1923, ESI Act, 1948- Payment of Wages Act, 1936, Minimum Wages Act, 1948, Payment of Bonus Act, 1965, National Wage Policy.

UNIT – IV:

Industrial Conflict: Causes, Types, Consequences, Prevention and Settlement – Collective Bargaining – Role, Methods, Degree of success, Problems and Issues – Grievance handling, Negotiation, Conciliation, Arbitration, Adjudication.

Text Books:

1. Arun Monappa , **"Industrial Relations"**, Tata Mc Graw Hill, New Delhi,2003.
2. P. SubbaRao **"Human Resource and Industrial Relations" ,** Tata Mc Graw Hill.

Reference Books:

1. Shamshuddin Shaik , **"Management of Industrial Relations",** Students helpline Publishing House Pvt. Ltd., Hyderabad,2011.
2. V. S. P. Rao , **"Human Resource Management" - Text & Cases**, Anurag Jain, New Delhi,2002.
3. R. S. Dwivedi , **"Managing Human Resources/Personnel Management in Indian enterprises",** Galgotia Publishing Company, New Delhi,2002.
4. B D. Sing ,**"Industrial Relations and Labor Laws"**, Excel Books, New Delhi,2009.
5. Sinha, Sinha & Shekhar – **"Industrial Relations, Trade Unions and Labour Legislations"** – Pearson Education

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB307) E-BUSINESS
(ELECTIVE-I)

Objective: The objective of the course is to provide students with a good knowledge of e-commerce and E-Business principles and practices.

UNIT -I:
E-Business Strategy and Models: E-Business Elements-Business requirements, Inhibitors of E-Business, E-Business Strategy. E-Markets: Functions, E-Markets vs Traditional Markets, E-Markets Success factors, E-Market Technology Solutions.

UNIT -II:
E-Procurements: The Purchasing Process, Developments in IT purchasing, E-Procurement-Models, E-Procurement- Solutions. Security and Reliability for E-Business: Reliability and Quality considerations, Quality requirements, Risk Management, Trust, E-Business Security, realizing a secure E-Business infrastructure.

UNIT -III:
Approaches to Middleware: Middleware, messaging, Remote Procedure calls (RPC), Remote Method Invocation (RMI), Message – Oriented Middleware (MOM), Data-Access Middleware, Transaction-Oriented Middleware, Distributed-Object Middleware,

UNIT -IV:
Enterprise application and E-Business Integration: Overview of Enterprise Application and E-Business Integration, Integration Challenges. E-Business Solutions and Protocols: Web Services-service-Oriented Architecture, required Business Standards and Protocols. Review of applicable IT Laws.

Text Books:
1. Ravi kalakota & Maina Robinson , **"E-Business Roadmap for success",** Pearson,2008
2. Kamalesh K Bajaj & Debjani Nag, **"E-Commerce, the Cutting Edge of Business",** TMH,2008

Reference Books:
1. Parg Diwan, **"E-Commerce",** Excel,2008
2. Michael P.Papazoglou & Pieter M.A. Ribbers , **"E-Business",** First Edition
3. WILEY Chaffey,**"E-Commerce and E-Business"**, Pearson,2009

MBA III Semester

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(13MB308) SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT (ELECTIVE-II)

Objective: To enlighten the students with the concepts and practical application of Security Analysis and Portfolio Management.

- Standard Statistical tables and Calculators to be allowed in the examinations.

UNIT -I:

Investment: Meaning, objectives, process of Investment – Investment Alternatives – Difference between speculation and Investment. Capital Markets : New Issue Market – Secondary Market – stock exchanges – meaning, features , functions – SEBI – Rights, powers, functions – NSE – BSE – OTCEI – Trading in stock exchanges.

UNIT -II:

Security Analysis: Fundamental Analysis – Economy, Industry, Company Analysis. Technical Analysis – Tools and Charting techniques – Technical Vs Fundamental Analysis – Efficient Market Theory – Random Walk Theory, Hypothesis, Forms of Market Efficiency, EMH Vs Fundamental and Technical Analysis, Competitive Market Theory.

UNIT -III:

Concept of Return and Risk: Revenue Return and Capital appreciation – Holding period – Statistical Methods – Probability Distribution – Calculation of Expected Return. Risk Factors – Types of Risks – Measurement of Risk – Standard Deviation – Variance – Correlation Co-efficient. Approaches of Valuation – Bond Valuation – Preference Share valuation and Common Stock Valuation.

UNIT -IV:

Portfolio Management: Process of Portfolio Management, Diversification – Modern Portfolio – Portfolio models – Markowitz model – Sharpe single index model, Capital Asset Pricing Model (CAPM) – Optimum Portfolio - Portfolio Revision.

Text Books:

1. S.KEVIN, **"Security Analysis and Portfolio Management**", PHI, New delhi,9th edition.
2. Dr. Prasanna Chandra, **"Investment Analysis and Portfolio Management " ,**Tata Mcgraw Hill 2009.

Reference Books:

1. Sudhindra Bhat , **"Security Analysis and Portfolio Management",**Excel Books
2. Bhalla V.K, **"Investment Management"** , Sultan Chand &Co, 4th Edition , 2008
3. Punithavathi Pandian **–" Security Analysis and Portfolio Management",** Vikas Publication 2009
4. Preeti Singh , **"Security Analysis and Portfolio Management",** , Himalaya Publications , 17th Edition ,2009.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB309) SERVICES MARKETING
(ELECTIVE-II)

Objective: The objective of this course is to develop an outlook into the rising trends in services and Enhance Effective Managerial Skills for Service Industry.

UNIT -I:
Understanding services marketing and Customer Relationship Marketing-Introduction, services in the modern economy, Classification of services, marketing services Vs. Physical services, services as a system. Relationship Marketing, the nature of service consumption understanding customer needs and expectations, Strategic responses to the intangibility of service performances.

UNIT -II:
Services market segmentations and creating value in a competitive market-The process of market segmentation, selecting the appropriate customer portfolio, creating and maintaining valued relations, customer loyalty. Positioning a service in the market, value addition to the service product, planning and branding service products, new service development.

UNIT -III:
Pricing strategies for services and Service promotion-Service pricing, establishing monetary pricing objectives foundations of pricing objectives, pricing and demand, putting service pricing strategies into practice. The role of marketing communication. Implication for communication strategies, setting communication objectives, marketing communication mix.

UNIT -IV:
Planning and managing service delivery and Marketing plans for services-Creating delivery systems in price, cyberspace and time. The physical evidence of the service space. The role of intermediaries, enhancing value by improving quality and productivity. The marketing planning process, strategic context, situation review marketing strategy formulation, resource allocations and monitory marketing planning and services.

Text Books:
1. Valarie A.Zeithaml & Mary Jo-Bitner: **"Services Marketing" - Integrating Customer Focus Acros the Firm**, TMH, 3rd edition,2003.
2. Christopher Lovelock, "**Services Marketing People, Technology, Strategy",** Pearson Education, Fourth Edition, 2002.

Reference Books:
1. Mark Davis, **"Managing Services People and Technology",** McGraw-Hill International,
2. Thomas J.Delong & Asish Nanda **"Managing Professional Servies"-Text and Cases**, McGraw-Hil International, 2002.
3. Adrian Payne, **"The Essence of Services Marketing",** Prentice-Hall of India Pvt. Ltd., 2002.
4. Roland T. Rust and P.K. Kannan, **"e-Service New Directions in Theory and Practice",** Prentice-Hal of India Pvt. Ltd., 2002.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB310) TRAINING AND DEVELOPMENT
(ELECTIVE-II)

Objective: This course is designed to provide in depth understanding and enable the students to manage training processes and system for developing human resource of the organization

UNIT -I:
Training concepts: Introduction, Concept - Training Process- Significance- Models of Training- Systematic Model- Transitional Model- Systems approach to training.

UNIT- II:
Training function & Policies: HR and the Training Function - Training Centers in Organizations – Evolving Training Policy - Training Budget and Schedules/Calendar

UNIT- III:
Training needs assessment & Design: Training Needs Assessment - Competency modeling - selection of Trainees- Course content design – Trainer skill development - Resistance in Training- Motivation of Trainee: Goal setting- Pre-training communication –Use of Ice breakers to stimulate interest.

UNIT- IV:
Training Methods & Evaluation: Indoor training methods- Outdoor training methods- . E-learning methods- Virtual Reality, Monitoring and Evaluation of training programme- Conceptual model of training - Effectiveness – Evaluation criteria - Kirkpatrick model

Text Books:
1. Raymond A.Noe **"Employee Training and Development"**, TMH ,2009
2. B.Rathan Reddy **"Effective Human Resource Training and development Strategy",** Himalaya,2009

Reference Books:
1. Donald L. Kirkpatrick and James D.Kirkpatrick, **"Evaluating Training programs",** Tata McGraw Hill,2009
2. Rolf P.Lynton and Udai Pareek, **"Training for development"**, Sage publications,2009
3. R.Krishnaveni **"Human Resource Development"**, ,Excel,2009
4. Aparna Raj **"Training- Theory and Practice",** Kalyani
5. R.K.Sahu **"Training and Development"**

MBA III Semester

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(13MB311) MANAGEMENT OF SOFTWARE PROJECTS
(ELECTIVE-II)

Objective: Presents a new management framework uniquely suited to the complexity of modern Software development, accepting management priorities and equips Software professionals. The software industry with field proven benchmark for making tactical decisions and strategic choices that will enhance an organizations probability of success.

UNIT- I:
Introduction to software Engineering: Size, Quality and productivity factors. Planning a software project, Cost estimation.

UNIT -II:
Software design concepts: modularization, Design strategies, Real time distributed systems design, Test plans.

UNIT- III:
Quality Assurance: Walk throughs and inspection, Static Analysis, Symbolic execution, unit testing & debugging, system testing and formal verification. Implementation issues – Structured Coding Techniques.

UNIT -IV:
Software Maintenance: Maintainability, Managerial aspects, configuration management, source code metrics, other maintenance tools and techniques.

Text Books:

1. Pressman**: Software Engineering** (Tata McGraw Hill)
2. Carlo Ghezzi, Mehdi Jazayuni and Dino Mandnioli**: Fundamentals of Software Engineering (**Prentice Hall of India)

Reference Books:

1. Rechord Fairley**: Software Engineering Concept** (Tata McGraw Hill)
2. Yary W.Hansen **"Software Engineering"** – Prentice Hall of India
3. Jeffray A. Hoffer, Joey F. George & Joseph – "**Modern Systems and Software Engineering**" Tata Mc. Graw Hill.
4. Nair N. G **"Management Systems"–** S. Chand

MBA III Semester	L	T	P	[C]
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(13MB312) RISK AND INSURANCE MANAGEMENT
(ELECTIVE-III)

Objective: The objective of this paper is to create an awareness about the different dimensions of Insurance and Non-Insurance by Individuals and Corporate.

UNIT -I:
Understanding Risk: Types of risk - Risk Management & Control – Risk Management Process – Methods – Cost of Risk – Maximizing Value by Minimizing the Cost – Measuring the Cost of Risk – Risk management by individuals – corporate risk management.

UNIT -II:
Risk shifting through limited liability – Liability for actions of Employees and other parties – Products-Liability – Environmental liability – Directors and Officers liability.

UNIT -III:
Definition of Insurance – Insurable risk – Principles of Insurance – Kinds of Insurance – Costs and benefits of Insurance – Pooling in Insurance – Factors that limit the insurability of risk – Reinsurance.

UNIT -IV:
Insurance business in India – Framework of Insurance business – privatization of Insurance business – Insurance Regulatory and Development Authority (IRDA) – Govt. Policy on Insurance sector- Functions of insurers – Product design and development – Pricing strategy – Insurance intermediaries – Promotion of Insurance – IT in Insurance.

Text Books:
1. Harrington. Niehaus, **"Risk Management & Insurance"** ,McGraw Hill
2. George E. Rajda **"Principles of Risk Management & Insurance"** ,Pearson

Reference Books:
1. James Triesehmann **"Risk Management & Insurance",**Thomson
2. Dr.P.K. Gupta **"Insurance & Risk Management"** Himalaya

MBA III Semester

	L	T	P	[C]
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(13MB313) SALES AND DISTRIBUTION MANAGEMENT
(ELECTIVE-III)

Objective: The objective of this course is to provide students an opportunity of learning the basics and concepts of Sales Management and Distribution Management.

UNIT - I:

Introduction of Management of Sales: Evolution of Sales Management- Nature and importance of Sales Management- Roles, Types and Skills of Sales Managers- Sales Objectives, Strategies and Tactics- Emerging Trends in Sales Management- Linking Sales and Distribution Management. Strategic Planning- Role of Marketing & Sales- Marketing & personal selling Strategies – Sales Strategy – Developing sales forecast-Forecasting approaches

UNIT -II:

Management of Sales and Distribution: Concepts of Sales Organization- Types of Sales organization structures- Specialization within sales organization- Sizing and Staffing the Sales force – Training and Motivating Sales Force- Compensating and Leading Sales force- Sales force expenses.

Distribution Management -Definition- Need for Distribution Management- Need for Distribution Channels – Value addition of Distribution Management- Marketing Channels- Channel Formats- Relationship of flows to service levels – Channel levels – Service Channels

UNIT -III:

Customer-Oriented Logistics Management and Retail Management: Introduction-objectives of Logistics- Logistics planning- Inventory Management decisions - Transportation decision. Retail Management- Introduction-Retail Marketing Mix and retail positioning –developing and Implementing Merchandise strategies-deciding on the customer service levels-trading format –customer communication strategy in retail outlets

UNIT -IV:

Designing Channel Systems and Managing the International Channels of Distribution: Channel Design factor – Channel planning process – Ideal Channel structure – Training, Motivating & Evaluating Channel members- Channel Design Comparison – Implementation. International Channels of Distribution- Introduction- Differences in customer-expectations across Countries-International orientation of companies –model of entry decision – implications of entry modes.

Text Books:

1. S L Gupta , **"Sales and Distribution Management",** Excel, 2009.
2. Krishna K Havaldar & Vasant M Cavale, **"Sales and Distribution Management",** TMH, 2007

Reference Books:

1. John F Tanner Jr, Earl D Honeycutt Jr & Robert C Erffmeyer, **"Sales Management"**,: Pearson Education, 2009.
2. Chunawala , **"Advertising, Sales and promotion Management"**, Himalaya, 2009
3. Tapan K.Panda, Sunil Sahadev ,**"Sales and Distribution Management"**, Oxford, 2009
   Jobber, **"Selling and Sales management"**, Pearson Education,7th edition 2009.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB314) HUMAN RESOURCE DEVELOPMENT
(ELECTIVE-III)

Objective: To inculcate the theoretical knowledge of achieving HR alignment with other systems in the company.

UNIT -I:
Introduction to Human Resources Development (HRD): Concepts of HR, HRM and HRD. Issues in HRD. Overview of HRD Practices. Integrated HRD system. Role and functions of HRD specialist. HRD Departments and their tasks; Competencies required for HRD staff.

UNIT - II:
Designing Effective HRD Programmes: Designing Employee and Managerial Development Programmes; Programs for employees who reach career plateau; parallel career paths. Retraining and redeployment. Job enrichment and Job sculpting. Succession Planning. HRD Interventions. HRD Matrix. Development of reliable and valid HRD instruments.

UNIT -III:
Implementing and Evaluating HRD Programmes: Delivering effective career development systems; Models and frameworks for evaluating HRD programmes; assessing the impact of HRD programs in monetary terms. HRD Audit.

UNIT -IV:
HRD Culture and Climate :HRD climate and Organizational climate; Counseling and mentoring of employees. Models for HRD. Elements and metrics of HRD climate. HRD approach to Industrial Relations.

Text Books:

1. Tapomoy Deb, **"Human Resource Development"- Theory and Practice**, Ane Books, New Delhi,2010.
2. Krishnaveni R. **"Human Resource Development" - A Researcher's Perspective.** Excel Books, New Delhi,2008.

Reference Books:

1. Tripathi PC, **"Human Resource Development"**, Sulthan Chand and Sons.
2. Uday Kumar Haldar, **"Human Resource Development"**, Oxford.
3. Desimone R.L. and J.M. Werner, **"Human Resource Development"**, Thomson Learning.5th edition, 2008
4. Richard A. Swanson and Elwood F. Holton III, **"Foundations of Human Resource Development"** , Berrett - Koehler Publications,2009.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB315) ENTERPRISE RESOURCE PLANNING
(ELECTIVE-III)

Objective: The objective of the course is to provide the basic concepts of Enterprise Resource Planning, ERP Implementation and Maintenance.

UNIT- I:
Induction to ERP: Overview of ERP,MRP,MRPII and Evolution of ERP, Integrated Management Systems, Reasons for the growth of ERP, Business Modeling, Integrated Data Model, Foundations of IS in Business, Obstacles of applying IT, ERP market. Business Process Re-engineering (BPR) – BPR Process, Clean Slate Re-engineering, Technology Enabled Re-engineering, Myths regarding BPR.

UNIT -II:
Business Intelligence Systems-Data Mining, Data Warehousing, On-line Analytical Processing (OLAP).

UNIT- III:
ERP Module I: Finance, Controlling, Accounting System, Manufacturing and Production Systems.
ERP Module II: Sales and Distribution Systems, Human Resource Systems.
ERP Module III: Plant Maintenance System, Material Management System, Quality Management System, ERP System Options and Selection, ERP proposal Evaluation.

UNIT- IV:
ERP Implementation and Maintenance: Implementation Strategy Options, Features of Successful ERP Implementation, Strategies to Attain Success, User Training, Maintaining ERP and IS. ERP Products: SAP, Oracle, Microsoft Dynamic, People Soft, Baan and their impact on enterprise applications.

Text Books:
1. Motiwala **"Enterprise Resource Systems"**, Pearson,2009
2. Alexis Leon **"Enterprise Resource Planning"** , TMH,2008

Reference Books:
1. Venugopal Rao **"Enterprise Resource Planning and MIS"**, Excel,2009.
2. Vinod Kumar Kard and NK Venkata Kristean **"ERP concepts & Practice"**, PHI,2008
3. Monk **"Concepts in ERP"** Thomson,2nd edition,2009
4. Mahadeo Jaiswal & Ganesh Vanapalli **"Enterprise Resource Planning"** ,Macmillan,2008

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB316) DIRECT TAXES
(ELECTIVE-IV)

Objective: To enable students understand the fundamentals of Direct taxes in general and Income tax and Wealth Tax in particular.

UNIT- I:
Income Tax Act : Definition – Income – Agricultural Income – Assessee – Previous year – Assessment year – Residential status – Scope of Total Income – Capital and Revenue – Receipts and Expenditure – Exempted Incomes.

UNIT- II:
Computation of Income: Computation of Income from Salary and Income from House property.

UNIT- III:
Computation of Taxable Income : Computation of taxable income from Business and profession – Capital gains – Income from other sources- Gross total Income- Deductions from Gross total Income- Assessment of individuals – Set off and carry forward of losses- Income tax authorities – E-Filing of IT Returns.

UNIT -IV:
Wealth Tax Act: Computation of taxable wealth- Exemptions and Deductions.

Text Books:
1. Gaur & Narang, **"Income Tax Law & Practice"**
2. Dr. Bhagavathi Prasad ,**" Income Tax"**

Reference Books:
1. Dr. H.C.Mehrotra **"Income Tax Law & Practice"**
2. Dingar Pagare **"Tax Laws"**
3. B.B. Lal **"Direct Taxes"**
4. Dr. Vinod Singhania **"Direct Taxes"**
5. Rupram Gupta & Vidya Saran Gupta **"Income Tax"**

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB317) LOGISTICS AND SUPPLY CHAIN MANAGEMENT
(ELECTIVE-IV)

Objective: The Objective of this course is to gain the knowledge of possibilities of efficient optimization and management of operation in integrated supply chains and also the ability to apply them in the enterprise reality.

UNIT -I:
Role of Distribution in Value discovery and supply chain management: Designing a distribution logistics system – Outsourcing of distribution logistics – Distinction between distribution logistics and supply chain management. Meaning and definition of Supply chain management in the global environment.

UNIT -II:
Customer focus in supply chain management, Planning demand and supply in a supply chain: Supply chain drivers and obstacles, Customer Service, Customer Satisfaction. Planning and Managing inventories in a supply chain – Transportation in a supply chain, modes of transportation, Transportation cost in E-retaining.

UNIT -III:
Net work design decisions and Production in supply chain management: Network operations, planning, Decision problem models, Information technologies in a supply decision- Purchasing in a supply chain management – financial issues in supply chain management – E-business and supply chain.

UNIT -IV:
Supply chain integration and Measuring Performance in the supply chain: Coordination in a supply chain – Inter functional Coordination – Inter Corporate Coordination- Managing the supply chain – Supply chain restructuring.

Text Books:

1. Bowersox, Closs, Cooper ,**"Supply chain Logistics Management",**TMH,2nd edition, 2009
2. Janat Shah, **"Supply Chain Management"**, Pearson

Reference Books:

1. Rhaul V. Altekar ,**"Supply chain management concepts and cases"** , PHI, 2008
2. Agrawal, **"Text Book of Logistics and Supply Chain Management"**, Macmillan,2008
3. Upendra Kachru ,**"Exploring Supply Chain – theory and practice"**, excel, 2009
4. R.P. Mohanty and S.G. Deshmukh, **"Supply Chain Management",** Jaico **,** 2009
5. K.Shridhara Bhat ,**"Logistics and Supply Chain Management"** Himalaya, 2009

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB318) LEADERSHIP AND TEAM BUILDING
(ELECTIVE-IV)

Objective: To enable students understand the qualities of a leader and the requirements of building and leading teams.

UNIT- I:
Leadership: Understanding Leaders and Leadership – Need for Leadership – Leader and Manager – Prerequisites of Organizational Leaders: Self-management dimensions – Leading People – Task management; Myths and Realities of Leadership – Current Issues in Leadership-Inner Structure of Effective Leaders.

UNIT- II:
Attributes of Leaders: Concepts of Power and Authority – Types of Power – Sources of Power – Leadership Skills & their development – Leadership Traits – Intelligence and Leadership – Influencing Tactics – Influencing Processes - Self efficacy.

UNIT -III:
Contemporary Leadership Styles: Transactional Leadership – Transformational Leadership – Charismatic Leadership – Value Based Leadership – Spiritual Leadership - Servant Leadership – Level 5 Leadership – Understanding and Influencing Motivation and Satisfaction of Follower – Leadership versus Job Performance.

UNIT -IV:
Building effective Teams: Understanding Teams – Differentiating Groups and Teams - Advanced Skills of Team Leaders – Building High Performance Teams. – Determinants of Team Performance –Facilitating Team Building – Interpersonal Competence and Team Building – Measuring Team Effectiveness – Decision Making in Teams.

Text Books:

1. Sundaray B K and Bhargav, N S, **"Leadership and Team Building"**, Himalaya Publication House.
2. Uday K Haldar, **"Leadership and Team Building"**, Oxford

Reference Books:

1. B. Rathan Reddy, **"Team Development & Leadership"**, Jaico Publishing House, Mumbai, 8th Impression, 2010.
2. Uma Jain, Udai Pareek, Madhukar Shukla **" Developing Leadership for the Global Era"**, MC millan.
3. Peter G. Northouse, **"Leadership-Theory and Practice"**, Response Books, 3rd Edition, 2006.
4. Luthans ,**"Organization Behaviour"**, Tata McGraw Hill,8th edition.

MBA III Semester	L	T	P	[C]
	4	0	0	[4]

(13MB319) DATAWAREHOUSING AND DATA MINING
(ELECTIVE-IV)

Objective: The objective of the course is to give an understanding Data Warehousing and Data Management concepts.

UNIT- I:
Managing Data: Individual Data Management, Organizational Data Warehousing and Data Management, Components of Organizational Memory, Evaluation of Database Technology. Database Systems in the Organization : Data Sharing and Data Bases – Sharing Data Between Functional Units, Sharing Data Between Different Levels of Users, Sharing Data Between Different Locations.

UNIT-II:
Data Warehousing Introduction: What is a Data Warehouse, Who uses Data warehouse, Need for Data Warehouse, Applications of Data Warehouse Concepts. The Data Warehouse Data Base: Context of Data Warehouse Data Base, Data Base Structures – Organizing Relational Data warehouse – Multi-Dimensional Data Structures – Choosing a Structure.

UNIT-III:
Meta Data: Human Meta Data, Computer Based Meta Data for people to use, Computer based Meta Data for the Computer to use. Analyzing the Contexts of the Data warehouse: Active Analysis, User Queries – OLAP.

UNIT-IV:
Constructing a Data Warehouse System: Stages of the Project – Developing a Project Plan, Data warehousing Design Approaches – The Architecture Stage. Getting Data into the Data warehouse – Extraction, Transformation, Cleaning, Loading and Summarization. Data Mining, Creating a Decision Tree, Correlation and Other Statistical Analysis, Neural Networks, Nearest Neighbor Approaches, Putting the Results to Use.

Text Books:

1. Efram G. Mallach, **"Decision Support Systems and Data warehouse Systems"**, TMH,2009
2. Marakas, **"Modern Data Warehousing, Mining and Visualization"-Core Concepts**, Pearson,2008

Reference Books:

1. Berson Smith ,**"Data warehousing, Data Mining OLAP"**, TMH,2008
2. Sivanandam, Thomson, **"Data Mining Techniques and Tasks**", THM 2009

MBA III Semester	L	T	P	[C]
	0	0	3	[2]

(13MB320) SOFT SKILLS LAB

Objectives: To equip students with effective speaking and listening skills in English, help them develop the soft skills and people skills which will make them to excel in their jobs and enhance to students' performs at placement interviews.

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

Reference Books:

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

MBA III Semester	L	T	P	[C]
	0	6	0	[2]

(13MB321) CASE STUDY-III

Objective: Objectives of the course are to enhance analytical and logical thinking capabilities of the student, to improve the communication and presentation skills of the student and to enable the student understand the process of problem analysis, identifying appropriate solutions with respect to the concepts of the subject.

Total sessions in a semester shall be distributed for all the subjects. The concerned teaching staff shall select the cases of recent origin for discussion.

Internal evaluation (50 marks): Case studies are conducted in atleast 5 subjects out of total 7 subjects. At least two cases per subject shall be considered for internal evaluation. Such case study analyses by student shall be produced as a record. Case studies for each subject are allotted 10 marks awarded by the concerned subject faculty and Head of the Department. The Head of the Department shall consolidate the marks of all such case studies and finalize the internal evaluation marks for 50.

Reference Books:

1. ICMR – ICFAI Case Management Research
2. **"Case study in each subject"** – Srinivasan
3. **"Business India"** – Magazine contains case study analysis.

MBA IV Semester	L	T	P	[C]
	4	0	0	[4]

(13MB401) STRATEGIC MANAGEMENT

Objective: The Objective of the course is to enable students have a grasp of various business strategies in general and functional management areas. It will provide a strategic orientation in conduct of the business

UNIT - I:
Introduction: Strategic management as a process – Environmental scanning- PESTEL analysis- Internal environment-core competence – Importance of strategic management- corporate portfolio analysis– Porter's five force model, BCG matrix, GE Model, TOWS Matrix, 7S, Market life cycle Model - Organization learning and experience curve.

UNIT -II:
Strategy Formulation: Process of Strategic formulation-Formulation of strategy at corporate, business and functional levels. Types of strategies: offensive strategy, defensive strategy, vertical integration and Horizontal strategy. Tailoring Strategy to fit specific industry and company situations.

UNIT -III:
Strategy Implementation: Strategy and structure- strategy and leadership, strategy for competing in global market and internet economy- Importance of Resource allocation - planning system for implementation - Growth strategy, Diversification strategy: Types of Diversification, Advantages and Disadvantages of Diversification.

UNIT -IV:
Strategy Evaluation and control: Establishing Strategic Controls, Types of Controls, Guidelines for proper control. Role of the strategist- Benchmarking to evaluate performance - strategic information system

Text Books:
1. Fred R. David, **"Strategic management concept and cases",** PHI,12th edition, 2008
2. Charles B Green, **"Strategic Human Resource Management"** ,Pearson Education, New.Delhi.

Reference Books:
1. Jeffrey A Mello, **"Strategic Human Resource Management"** Thomson Press (P) Ltd, Delhi.
2. P.Subba Rao, **"Strategic management"** Himalaya Publishers, 2009
3. Thompson & Strickland, **"Strategic management concepts and cases"** 2007.
4. Francis Cherunilam**, "Strategic management"** Himalaya Publishers, N.Delhi.
5. Charles W L Hill& Gareth R. Jones, **"Strategic management Theory"**

Rajan Das, **"Craftying the Strategy"** TMH 2006.

MBA IV Semester	L	T	P	[C]
	4	0	0	[4]

(13MB402) INTERNATIONAL BUSINESS MANAGEMENT

Objective: The challenges in International Business Management, The blocks and strategies are the focal points of the course. It helps students acquire conceptual frame work, knowledge and insight to operate at International Level.

UNIT- I:

International Business: Introduction, Concept, Definition, Scope, Trends, Challenges and opportunities; Nature, Meaning and Importance of International competitive advantage, Multidimensional view of Competitiveness - Evolution of International Business - International Marketing vs. Domestic Marketing - International Economic, Political, Legal, Social and Cultural – Frame Work.

UNIT -II:

International Trade Regulatory Frame Work : Trade barriers - tariffs, subsidies and Quotas - Trade and BOP of India – Highlights of India's Merchandise Trade Performance – Direction of Trade – Trade in Services – Major Problems of India's Export Sector- Counter Trade - World Trade in services – GATT, WTO- Institutional infrastructure for export promotion in India–EXIM Bank –ECGC - Export Finance and Export Promotion Measures.

UNIT -III:

International Investment and Finance : Types of Foreign Private Investment – Significance of Foreign Investment – FDI and Production Linkages – Trade and Investment – Factors Affecting International Investment – Limitations and Dangers of Foreign Capital - Financial Perspectives- International monetary systems and Financial Markets, IMF, IBRD, IFC, IDA, existing international arrangements- Balance of payment – Foreign Exchange market mechanism – Import substitution and Export financing - Different kinds of Special Economic Zones

UNIT- IV:

Strategy of International Business: Organization of international business – Staffing policy, managing the Expatriates – Globalization - Technology and its impact, Enhancing technological capabilities, Technology generation, Technology transfer- International marketing strategies in different stages of product life cycle – Marketing of Products in International Markets.

Text Books:

1. Francis Cherunilam, **"International Business Environment",** Himalaya Publications, 3rd Edition, 2010.
2. K.Aswathappa ,**" International Business"**, McGraw Hill

Reference Books:

1. Shiva Ramu. S, **"International Business"**, Ammol Publications.
2. Don Ball and Wendell McCulloch **" International Business"** ,McGraw Hill
3. Ajitabh, **" Global Competitiveness"**,Excel
4. Michael R.Czinkota , Michael H.Moffett , **"International Business"** ,7th Edition

MBA IV Semester

	L	T	P	[C]
	4	0	0	[4]

(13MB403) FINANCIAL DERIVATIVES
(ELECTIVE-V)

Objective: The objective of this course is to make the student efficient in the area of Financial Derivatives, give them the knowledge of basics in Financial Derivatives.

UNIT- I:

Introduction to Derivatives: Meaning and need, growth of Financial Derivatives in India, Types of derivatives, and the Regulatory frame work of Derivatives Trading in India, Types of Traders/Participants, OTC and Exchange Traded Securities. Role of Derivatives Market- Uses & misuses of Derivatives.

UNIT- II:

Forwards and Futures Markets:- Different categories of Forwards and Futures, Currency Futures ,Interest rate futures ,difference between Forwards and Futures, Hedging strategies ,Hedging with stock index Futures - Determination of Forward and Future prices, Interest Rate Futures ,Currency Futures and Forwards.

UNIT- III:

Option Market: Structure of Option Market, Specifications Of Option ,American and European Options ,Options Vs Futures, Trading strategies involving Options, Option on Stock Indices –Option Market In India ,Option Pricing Models – Introduction to Binomial Option Pricing Model ,Black Scholes Option Pricing Model- Option Strategies : Advanced Option Strategies, Hedging With Options, Currency Options.

UNIT -IV:

Swaps: Meaning, Overview – The Structure of Swaps, Evolution of Swaps Market, Interest Rate Swaps, Currency Swaps, Commodity Swaps, Swap Variants, Swap Dealer role, Equity Swaps, Futures and Swaps, Index Swaps, Credit Risk Swaps, Pricing and Valuing Swaps, Management of Risk through Swaps.

Text Books:

1. John C Hull **"Fundamentals of Futures and Options market"** Pearson education
2. Bishnu Priya Mishra and Sathya Swaroop Debasish **"Financial Derivatives"** Excel, 2009

Reference Books:

1. S.L. Gupta **"Financial Derivatives"** PHI 2008
2. John C Hull "**Options, futures and other derivatives"** Pearson education
3. N D Vohar and BR Bagri **"Futures and Options"** McGraw Hill
4. Jayanth Rama Varma **"Derivatives and risk management"** McGraw Hill
5. T.V.Somanathan **"Derivatives"** TMH
6. Sunil K Parameswaran **"Futures markets"** McGraw Hill

MBA IV Semester

	L	T	P	[C]
	4	0	0	[4]

(13MB404) CUSTOMER RELATIONSHIP MANAGEMENT
(ELECTIVE-V)

Objective: To familiarize the students with the emerging trends in customer relations in the Indian business and to manage these relations in an effective manner to increase customer loyalty.

UNIT -I:
Introduction to CRM: CRM as a business strategy - Elements of CRM - CRM Processes and systems - Entrance, applications and success of CRM.

UNIT -II:
Strategy and Organization of CRM: Description of customer-Supplier relationships –The dynamic in relationships - Communities - CRM as an integral business strategy- The nature & context of CRM strategy - The results of a successful CRM strategy.

UNIT -III:
The Relationship-Oriented Organization : Mission-Culture -Structure -People –Communication and information –Systems- 6 Communications and Multi channels - Customers and the use of the channels - Influence of the channels on pricing and the formation of relationships- The individualized customer proposition - Customization - Individualization of the product offering - Individualized Pricing Policy.

UNIT -IV:
Loyalty Programs: Improvement of the size and Quality of the Customer Database - Retention and cross-sell analyses - Retention - Cross-selling -The effects of Marketing activities -Evaluating the effect of Marketing activities on the customer value -Experiments - The learning Organization.

Text Books:

1. Stan Maklan, Adrian Payne, Joe Peppard, Lynette Ryals, Simon Knox – **"Customer Relationship Management" Perspectives from the market place** – Elsevier 2002.
2. Mitch Schneider – **"Total Customer Relationship Management"** – Thomson Delmar Learning 2002.

Reference Books:

1. Russ Lombardo – **"CRM for the Common Man"** – PEAK Sale Consulting 2003
2. Federico Rajola – **"Customer Relationship Management: Organizational; and Technological Perspectives"** – Springer 2003
3. Jagadesh Seth – **"Customer Relationship Management"**
4. Chaturved – **"Customer Relationship Management"**
5. Roger J Baren – **"Customer Relationship Management"**
6. Das Subhasish –**"Customer Relationship Management"**

MBA IV Semester

	L	T	P	[C]
	4	0	0	[4]

(13MB405) PERFORMANCE AND COMPENSATION MANAGEMENT (ELECTIVE-V)

Objective: The objective of this course is to specialize the HR students in the process of Performance and Compensation Management

UNIT -I:

Overview of Performance and Compensation Management: Concept of Performance Management – purpose and significance- Benefits to managers and employees- characteristics, process of performance management-Compensation Management: Concept, Significance, Basis for Compensation, Factors influencing compensation Practices, Trends, Compensation Determination.

UNIT -II:

Organizational performance & Pay Structures: Pay structures - Purpose and Types; Graded pay structures, Broad Banding, Rewarding individual and Team contributions. Relating rewards to organizational performance, non financial rewards.

UNIT-III:

Rewarding Performance and Executive Compensation: Individual-Based Compensation; Team Based Compensation; Incentives: Types of Incentive Plans, Employee Benefits and Pensions, Policies and Practice of Benefits; Agency Theory and Executive Compensation; Principles of Executive Compensation; Factors Affecting Executive Compensation; Models of Executive Compensation.

UNIT-IV:

International pay and expatriates rewards: Rewarding Sales Staff, Managing Reward Systems, Statutory Provisions: Wage Boards, Pay Commission – Pay Budget Management – International Pay System - The Role of Fringe Benefits in Reward Systems.

Text Books:

1. D Singh, **"Compensation and reward System",** Excel, 2008.
2. Tapomoy Deb **"Compensation Management",** Excel Books,2009

Reference Books:

1. Henderson **"Compensation Management"** Pearson, 2008.
2. Milkovich,Newman **"Compensation Management"** TMH,2009
3. Sunil Bakshi **"Compensation Management"** Paragon International, 2009.
4. Michael Armstrong **"Employee Reward"** Oxford,2008
5. Dr. Sakshi Vasudeva **"Compensation Management"** Paragon International,2009

MBA IV Semester

	L	T	P	[C]
	4	0	0	[4]

(13MB406) DATA COMMUNICATION AND NETWORK SECURITY
(ELECTIVE-V)

Objective: The objective of the course is to provide the basic concepts of Data Communication and Network Analysis, network security, privacy and data encryption.

UNIT-I:
Introduction – General structure of Networks – ISO, OSI Reference Model. Hierarchical Network, connectivity analysis – delay analysis – local access Network design. Physical layer: transmission and multiplexing – digital transmission – circuit switching packet switching – terminal handling – error correction and error correcting codes.

UNIT-II:
Data – link layer: simple protocols. Unrestricted stop and wait sliding window protocols. Network layer: virtual circuits and data grams, centralize hierarchical and broadcasting algorithms.

UNIT-III:
Transportation layer and Session layer: transport service – addressing and connection establishment – flow control and buffering – synchronization – crash recovery gate way– internet work fragmentation – session layer. Presentation layer: network security and privacy – data encryption – key distribution authentication and digital signatures – virtual terminal protocols – file transfer protocols.

UNIT-IV:
Application layer – distribution systems. ISDN – Service & History, TCP/IP and Net Working and Inter net working Derives.

Text Books:

1. Duck& Read **"Data Communication and Computer Networks"** Person,2nd edition2009
2. Behrouz A. Forouzan **"Data Communications and Net Working"** TMH,2009

Reference Books:

1. Bertsekas & Gallages **"Data Networks"** PHI
2. Michael A. Gallo "**Computer Communications and Networking Technologies"** Cengage,2009
3. William A. Shay **"Understanding Data Communications & Networks",** Vikas.

MBA IV Semester

	L	T	P	[C]
	4	0	0	[4]

(13MB407) INTERNATIONAL FINANCIAL MANAGEMENT
(ELECTIVE-VI)

Objective: To enlighten the students on the concepts and practical applications of International Financial Management.

UNIT - I:
Foreign Exchange Market: Function and structure of Forex market – major participants – Foreign Exchange Quotations –Types of transactions – Spot, Forward, Futures, Options and Swaps- Arbitrage and Speculation in Foreign Exchange market- Exchange Arithmetic, Spread , premium and discount. BOP and its components – Capital account and current account.

UNIT - II:
International Monetary System : Introduction , Gold Standard, Bretton Woods System, Exchange rate regime – Fixed and Floating Exchange Rate –convertibility currency , International Liquidity and International Reserves- IMF and World Bank Exchange Rate mechanism. Factors affecting Foreign rates – Purchasing power parity – Interest Rate Parity theorems

UNIT - III:
Foreign Exchange Exposure: Transaction exposure, Accounting exposure and operating exposure - Techniques for covering the Foreign Exchange Risk.

UNIT - IV:
International Financial Market Instruments- International Equities- ADRs and GDRs- Foreign Bond and Euro Bond- Short Term and Medium Term Instruments – Risk assessment in International markets – Role of commodities.

Text Books:

1. T.Siddaiah **"International Financial Management"** Pearson , 2009
2. Madhu ViJ **"International Financial Management"** Excel Books

Reference Books:

1. P.G. Apte, **"International Financial Management",** Tata Mc Graw Hill, 3rd Edition
2. V.Sharan, **"International Financial Management",** Prentice Hall of India,3rd Edition.
3. Buckley Adrin, Engle Wood Cliffs " **Multinational Finance"**, Prentice Hall of India,3rd Edition.
4. S.P.Srinivasan, B.Janakiram, **"International Financial Management"**, Wiley India, New Delhi.
5. Clark, "**International Financial Management"**, Cengage,
6. A.K.Seth, **"International Financial Management"**, Galgothia Publishing Company.

MBA IV Semester

L	T	P	[C]
4	0	0	[4]

(13MB408) BRAND AND ADVERTISING MANAGEMENT (ELECTIVE-VI)

Objective: The course aims at making students understand the Significance of Brands and their management and the significance of advertising and dynamics of marketing communication.

UNIT –I:

Basic understanding of brands – concepts and process – significance of a brand – brand mark and trade mark – different types of brand – family brand, individual brand, private brand – selecting a brand name – functions of a brand – branding decisions – influencing factors. Brand vision – brand ambassadors – brand as a personality, as trading asset, Brand extension – brand positioning – brand image building.

UNIT –II:

Branding impact on buyers – competitors, Brand loyalty – loyalty programmes – brand equity – role of brand manager – Interrelations with manufacturing, marketing, finance, purchase and R & D – brand audit. Brand rejuvenation and re-launch, brand development through acquisition takes over and merger – Monitoring brand performance over the product life cycle. Co-branding. Designing and implementing branding strategies

UNIT- III:

Advertisements concepts and Media plan - Concept and definition of advertisement – Social, Economic and Legal Implications of Advertisements – setting advertisement objectives – Ad. Agencies – selection and remuneration – advertisement campaign. Media plan – type and choice criteria – reach and frequency of advertisements – cost of advertisements related to sales – media strategy and scheduling

UNIT- IV:

Message development – different types of advertisements – layout – design appeal – copy structure – advertisement production – print – Radio. T.V. and web advertisements – Media Research – testing validity and reliability of ads – measuring impact of advertisements. Testing for advertising effectiveness; Preparation and choice of methods of advertising budget; Ethical and social issues in advertising; Management of advertising agencies; Role of advertising in natural development.

Text Books:

1. Kevin Lane Keller, "**Strategic brand Management",** Person Education, New Delhi, 2003.
2. S.H.H.Kazmi, Satish K Batra, **"Advertising & Sales Promotion",** Excel Books, New Delhi, 2001.

Reference Books:

1. Lan Batey **Asian Branding – "A great way to fly"**, Prentice Hall of India, Singapore 2002.
2. Jean Noel, Kapferer, **"Strategic brand Management"**, The Free Press, New York, 1992.
3. Paul Tmeporal, "**Branding in Asia"**, John Wiley & sons (P) Ltd., New York, 2000.
4. S.Ramesh Kumar, "Managing Indian Brands", Vikas publishing House (P) Ltd., New Delhi, 2002.
5. Jagdeep Kapoor, Brandex, Biztantra, New Delhi, 2005.

MBA IV Semester	L	T	P	[C]
	4	0	0	[4]

(13MB409) GLOBAL HUMAN RESOURCES MANAGEMENT
(ELECTIVE-VI)

Objective: To enlighten the students with the Concepts and strategies of International Human Resource Management.

UNIT – I:

International HRM & Cross cultural Theories : Concept, HRM at International Perspective – Distinction between Domestic and International HRM – , Hofstede's Hermes Study - HR Challenges at International Level.

UNIT – II:

International staffing, Compensation Management: Nature, Sources, Policies of HR Planning: Recruitment and Selection – Career Cycle for Expatriates – International Compensation – Objectives, Components – Approaches of Compensation in Global Assignments.

UNIT – III:

Expatriate Training: Need, Cross Cultural Training, Training Expatriation – Repatriation - Learning – Performance Management and HR Process – Competency Appraisal – Programs and Agencies.

UNIT – IV:

Industrial Relations at Global Level: IR Scenario in Global Organizations – Trade Unions at International Level – Collective Negotiations, Disputes/Conflicts, Quality Circles and Participative Management, People Management – USA, Europe, Asia, Middle East.

Text Books:

1. Subba Rao **"International Human Resource Management"** Himalaya,2008
2. Rao P.L **" Internal Human Resource Management"** , Excel.2008

Reference Books:

1. Aswathappa "**International Human Resource Management"** TMH,2009
2. Tony Edwards & Chris Rees **"International Human Resource Management"** Pearson,2008
3. Adler N.J, Kent **"International Dimensions of Organizational Behaviour"**
4. Dowling P.J, Thomson "**International Dimension of Human Resource Management"** Cengage,2009

MBA IV Semester

	L	T	P	[C]
	4	0	0	[4]

(13MB410) CORPORATE INFORMATION MANAGEMENT
(ELECTIVE-VI)

Objective: The objective of the course is to provide a broad outline of Information Technology and its application at corporate business units and to understand all the issues related to the IT management.

UNIT – I:
IT planning and strategy tools: Strategy analysis – environment analysis- Conducting strategy audit- Assessing opportunities and risks- Company –technology analysis – Industry –technology analysis. Extending the enterprise: Organizing for innovation –Collaboration- Understanding business networks: differentiation interdependence and ownership – Designing hybrid governance models- Building collaborative community- Emerging network business models.

UNIT –II :
IT Alignments : Building the case for IT- leveraging infrastructure and creating options- Components of internet working infrastructures –Rise of internet working – business implications. Managing IT services : Availability facilities- uninterruptible power –Delivery- climate control – security – New service models.

UNIT – III:
IT outsourcing - Managing risk through incremental outsourcing- Outsourcing advantages and disadvantages- Outsourcing opportunities- Managing relationships with outsourcing agencies
Coordination and control of IT : Development stages of IT in organising- Nolans' model- Distributed **data processing** - Centralisation vs decentralisation- drivers toward user dominance- Drivers towards centralised policy- Coordination and location IT policy.

UNIT – IV:
Project management: Project categories- Project management: stage in project –planning and controlling tools-Problems – Towards effective project management. Technology and innovation: Understanding technological developments- Technology cycles-. Creative idea generation- Employee creativity – R&D- Role in technology development-Innovations in IT

Text Books:
1. Lynda M.Applegate, Robert D.Ausitn and F. Warren McFarlan, ***"Corporate Information strategy and Management",*** TMH
2. C,S,G,,Krishnamcaharyulu and Lalitha R. ***"Management of Technology",*** Himalaya

Reference Books:
1. Sanjiva Shankar Dubey **"IT strategy and Management"** PHI, 2009.
2. Parag Kulkarni **"IT strategy for Business"** Oxford, 2009.
3. V.K.Narayan **" Managing Technology and Innovation for competitive Advantage"** Pearson, 2009.
4. C.K.prahlad **"The New Age of Innovation"** TMH, 2009

MBA IV Semester	L	T	P	[C]
	0	3	0	[2]

(13MB411) SEMINAR

Object: The objective of the seminar is to collect the information on a specialized relevant topic and prepare a report, showing his understanding over the topic, and submit to the department. The assessment for 20 marks (10 marks for report, 10 marks for subject content) will be made by a board consisting of HOD and two internal experts at the end of the semester instruction. The assessment for 30 marks (20 marks for presentation and 10 marks for queries) will be evaluated by the Department Committee consisting of Head of the department, Seminar Supervisor and a Senior Faculty Member.

Students are required to present a seminar on any contemporary issue of the business.

MBA IV Semester	L	T	P	[C]
	0	6	0	[2]

(13MB412) CASE STUDY-IV

Objective: Objectives of the course are to enhance analytical and logical thinking capabilities of the student, to improve the communication and presentation skills of the student and to enable the student understand the process of problem analysis, identifying appropriate solutions with respect to the concepts of the subject.

Total sessions in a semester shall be distributed for all the subjects. The concerned teaching staff shall select the cases of recent origin for discussion.

Internal evaluation (50 marks): Case studies are conducted in atleast 5 subjects out of total 7 subjects. At least two cases per subject shall be considered for internal evaluation. Such case study analyses by student shall be produced as a record. Case studies for each subject are allotted 10 marks awarded by the concerned subject faculty and Head of the Department. The Head of the Department shall consolidate the marks of all such case studies and finalize the internal evaluation marks for 50.

Reference Books:

1. ICMR – ICFAI Case Management Research
2. **"Case study in each subject"** – Srinivasan
3. **"Business India"** – Magazine contains case study analysis.

MBA IV Semester	L	T	P	[C]
	0	12	0	[10]

(13MB413) PROJECT WORK

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

References:

1. Business Essentials: *Research Project*, Viva, 2009
2. Paul Oliver:Writing Your Thesis, Sage, 2009
3. M.K.Rampal & S.L.Gupta: Project Report Writing, Paragon International,2009
4. Michael Jay Polonsky: David S Waller: Designing and Managing a Research Project, Sage, 2009
5. Surendra Kumar: An Aid to Project Work, Paragon International, 2009.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Gudur, Nellore Dist - 524101, A.P (India)

Course Structure for MCA Regular Programme
Applicable for students admitted from Academic Year 2013-14

MCA I Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)		Scheme of Examination			No. of Credits
			Th	Lab	IM	EM	Total Marks	
1	13MC101	Problem Solving and "C" Programming	4	-	40	60	100	4
2	13MC102	Computer Organization	4	-	40	60	100	4
3	13MC103	Discrete Structures and Graph Theory	4	-	40	60	100	4
4	13MC104	Probability and Statistics	4	-	40	60	100	4
5	13MC105	Accounting and Financial Management	4	-	40	60	100	4
6	13MC106	Computer Organization Lab	-	3	40	60	100	2
7	13MC107	C Programming Lab	-	3	40	60	100	2
8	13MC108	I.T. Workshop and Accounting Lab	-	3	40	60	100	2
		Contact Periods / Week	**20**	**9**	**320**	**480**	**800**	
		Total Periods / Week	**29**		**Total Credits**			**26**

MCA II Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)		Scheme of Examination			No. of Credits
			Th	Lab	IM	EM	Total Marks	
1	13MC201	Systems Programming	4	-	40	60	100	4
2	13MC202	Data Structures	4	-	40	60	100	4
3	13MC203	Operating Systems	4	-	40	60	100	4
4	13MC204	Principles of Programming Languages	4	-	40	60	100	4
5	13MC205	Organizational Structures and Personnel Management	4	-	40	60	100	4
6	13MC206	Operating Systems Lab	-	3	40	60	100	2
7	13MC207	Data Structures Using C++ Lab	-	3	40	60	100	2
8	13MC208	Soft Skills Lab	-	3	40	60	100	2
		Contact Periods / Week	**20**	**9**	**320**	**480**	**800**	
		Total Periods / Week	**29**		**Total Credits**			**26**

MCA III Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)		Scheme of Examination			No. of Credits
			Th	Lab	IM	EM	Total Marks	
1	13MC301	Database Management Systems	4	-	40	60	100	4
2	13MC302	Software Engineering	4	-	40	60	100	4
3	13MC303	Design and Analysis of Algorithms	4	-	40	60	100	4
4	13MC304	Java Programming	4	-	40	60	100	4
5	13MC305	Operations Research	4	-	40	60	100	4
6	13MC306	Database Management Systems Lab	-	3	40	60	100	2
7	13MC307	Java Programming Lab	-	3	40	60	100	2
8	13MC308	Seminar-I	-	-	100	-	100	2
		Contact Periods / Week	**20**	**6**	**380**	**420**	**800**	
		Total Periods / Week	**26**				**Total Credits**	**26**

MCA IV Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)		Scheme of Examination			No. of Credits
			Th	Lab	IM	EM	Total Marks	
1	13MC401	Computer Networks	4	-	40	60	100	4
2	13MC402	Linux Programming	4	-	40	60	100	4
3	13MC403	Data Warehousing and Data Mining	4	-	40	60	100	4
4	13MC404 13MC405 13MC406	**Elective-I** 1.Artificial Intelligence 2.Human Computer Interaction 3.Design Patterns	4	-	40	60	100	4
5	13MC407 13MC408 13MC409	**Elective-II** 1.Computer Graphics 2.Neural Networks and Fuzzy Systems 3.Distributed Systems	4	-	40	60	100	4
6	13MC410	Linux Programming Lab	-	3	40	60	100	2
7	13MC411	Data Warehousing and Data Mining Lab	-	3	40	60	100	2
8	13MC412	Qualitative and Quantitative Analysis	2	-	40	60	100	2
		Contact Periods / Week	**22**	**6**	**320**	**480**	**800**	
		Total Periods / Week	**28**		**Total Credits**			**26**

MCA V Semester

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)		Scheme of Examination			No. of Credits
			Th	Lab	IM	EM	Total Marks	
1	13MC501	Object Oriented Systems Development	4	-	40	60	100	4
2	13MC502	Web Technologies	4	-	40	60	100	4
3	13MC503	Software Testing Methodologies	4	-	40	60	100	4
4	13MC504 13MC505 13MC506	**Elective-III** 1.Cloud Computing 2.Cryptography and Network Security 3.E-Commerce	4	-	40	60	100	4
5	13MC507 13MC508 13MC509	**Elective-IV** 1.Mobile Application Development 2.Information Retrieval Systems 3.Software Project Management	4	-	40	60	100	4
6	13MC510	Object Oriented Systems Development (Using UML) Lab	-	3	40	60	100	2
7	13MC511	Web Technologies Lab	-	3	40	60	100	2
8	13MC512	Seminar-II	-	-	100	-	100	2
		Contact Periods / Week	**20**	**6**	**380**	**420**	**800**	
		Total Periods / Week	**26**		**Total Credits**			**26**

MCA VI Semester

Sl.No	Course Code	Subject	Scheme of Examination			No. of Credits
			IM	EM	Total Marks	
1	13MC601	Project Work	-	A/B/C/D	-	16
		Contact Periods / Week	**-**	**-**	**-**	**16**
			Total Credits			

Detailed Syllabus

MCA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MC101) PROBLEM SOLVING AND "C" PROGRAMMING

Objectives are to understand

- How to solve the problems through programming approach.
- The algorithm design and flow chart design.
- C programming fundamentals.
- Various elements like arrays, strings, pointers, functions, files in C language.

UNIT- I:

Problem Solving: Problem - Solving Techniques, need for programmed languages, Design of Algorithms, Analysis of Algorithm Efficiency and Analysis of Algorithm Complexity, Pseudo codes, flow charts and decision tables.

C Programming Fundamentals: History of C , program development steps , C Preprocessor, Structure of a C Program, identifiers, keywords, Variables ,Constants, Data Types and Storage, Expressions, Operators, Decision and Loop Control Statements, Input – output statements.

UNIT- II:

Arrays: concepts, declaration, definition, accessing elements, storing elements, types of arrays, applications of arrays.

Strings: Declaration and Initialization of Strings, Array of Strings, Built-in String Functions and Applications, Other String Functions.

UNIT –III:

Functions: Definition, Declaration, Function Prototypes, Storage Classes, Recursion.

Pointers: Pointers and their Characteristics, Address and Indirection Operators, Pointer Type Declaration and Assignment, Pointer Arithmetic, Passing Pointers to Functions, Arrays of Pointers.

UNIT –IV:

Files: concept of a file, text files and binary files, streams, standard I/o, Formatted I/o, file I/o operations, error handling.

Structures and Unions: Declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, type def, bit fields.

C Graphics Basics: Graphics programming, initializing the graphics, C Graphical functions, simple programs.

Text Books:

1. R. G. Dromey, How to Solve it by Computer, Prentice Hall Of India Ltd, New Delhi,1982.
2. Ashok N. Kamthane, Programming with ANSI and Turbo C, Pearson Education, New Delhi,2002.

Reference Books:

1. P. Padmanabham, P. S. Subramanyam,C & Data structures - B.S. Publications.
2. B.W. Kernighan, Dennis M.Ritchie ,The C Programming Language, 2/E, PHI/Pearson Edition,1988.
3. J.A. Jones & K. Harrow ,C Programming with problem solving, , Dreamtech Press.

MCA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MC102) COMPUTER ORGANIZATION

Objectives are to understand

- The number systems, kmaps, logic gates.
- The basic cpu organization.
- 8086 assembly instructions.
- Memory organization.

UNIT –I:

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

Intel 8086 Assembly Language Instructions-I: Data transfer instructions, input- output instructions, address transfer, Flag transfer and arithmetic, logical, shift, and rotate instructions

UNIT –II:

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

Intel 8086 Assembly Language Instructions-II: Conditional and unconditional transfer, iteration control, interrupts and process control instructions, assembler directives, Programming with assembly language instructions.

UNIT- III:

Combinational And Sequential Circuits: Design of Combinational Circuits – Adder/ Subtracter – Encoder – Decoder – MUX / DEMUX – Comparators, Flip Flops – Triggering – Master – Slave Flip Flop – State Diagram and Minimization – Counters – Registers.

UNIT- IV:

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

Text Books:

1. M. Morris Mano , Computer System Architecture, 3rd Edition, PHI/Pearson Education,2008.
2. Douglas Hall, Microprocessors and Interfacing, 2nd Edition, Tata McGraw-Hill,2005.

Reference Books:

1. Carl Hamacher, Zvonko Vranesic, Safwat Zaky ,Computer Organization, Vth Edition, McGraw Hill.
2. Sivarama P.Dandamudi , Fundamentals of Computer Organization and Design, Springer Int,2003.
3. William Stallings, Computer Organization and Architecture, 7th Edition, Pearson/PHI,2007.
4. M. Morris Mano, Digital Design, 3rd Edition, PHI/Pearson Education, 2007.

MCA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MC103) DISCRETE STRUCTURES AND GRAPH THEORY

Objectives:

- To make Understand mathematical logic, predicates.
- Understand relations, algebraic structures.
- Understand the combinatory and graph theory.

UNIT –I:

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

Predicates: Predicates, variables a n d quantifiers, predicate formula, free and bound variables, inference theory of the predicate calculus.

UNIT –II:

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

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

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

UNIT –III:

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

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

UNIT- IV:

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

Text Books:

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

Reference Books:

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

MCA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MC104) PROBABILITY AND STATISTICS

Objectives: The Subject is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many engineering fields.

UNIT – I:
Probability & Random Variables
Conditional probability – Baye's theorem – Discrete and continuous random variables – Distributions – Distribution functions - Binomial – Poisson – Normal distributions.

UNIT – II:
Test of Hypothesis – Population and sample – Confidence interval of mean from normal distribution – Statistical Hypothesis – Null and Alternative Hypothesis – Level of Significance – Test of Significance – Test based on normal distribution – Z – test for means and proportions; small samples – t-test for one sample and two sample problems and paired t –test, F – test and Chi squared test (testing of goodness of fit and independence.

UNIT – III:
Analysis of variance one way classification and two way classification (Latic square Design and RBD)

UNIT – IV:
Statistical Quality Control: Concept of Quality of a manufacture product – Defects and defectives – causes of variations – Random and assignable
Queuing theory – Pure Birth and Death process – M/M/1 and their related simple problems

Text Books:
1. E. Keshava Reddy & E Rukmangadachari, Probability and Statistics,1/e, Pearson Education
2. Dr J Ravichandran , Probability and Statistics –– Wiley – India Publishers

Reference Books:
1. TKV Iyengar et al, Probability and Statistics , S.Chnad Publications
2. Dr. B.S. Grewal, Higher Engineering Mathematics, Khanna Publication,1988.
3. Erwin Kreyzig , Advanced Engineering Mathematics ,2010.
4. Purna Chandra Biswal, Probability & Statistics, Eastern Economy Edition

MCA I Semester	L	T	P	[C]
	4	0	0	[4]

(13MC105) ACCOUNTING AND FINANCIAL MANAGEMENT

Objective: The objective of this course is to acquaint the students regarding Financial Management tools and Accounting Techniques in Financial decision making.

UNIT-I:
Introduction to Accounting: Principles, Concepts and Conventions, Double Entry System of Accounting, Classification of Accounts and Debit-Credit Rules.
Financial Statements: Introduction to basic books of accounts, Journal and ledger-trial balance-preparation of final accounts: trading account, profit and loss account and balance sheet.

UNIT -II:
Introduction to Financial Management: Meaning and scope, goals & objectives, role of financial manager, sources of finance time value of money-goals of financial management, leverages: operation, financial leverage and combined leverage. (Simple problems)
Capital structure: Cost of capital: cost of equity, preference shares and bonds –weighted average cost of capital. (Simple problems)

UNIT -III:
Financial Analysis Through Ratios: Ratio Analysis, classification of ratios – Short term solvency and Long term solvency – profitability ratios- Analysis and interpretation of Financial Statements. (Simple problems)
Funds Flow and Cash Flow Analyses: Meaning, importance, statement of changes of working capital, statement of sources and Application of Funds. Cash Flow Analysis: Cash Flow Statements: Preparation, Analysis and Interpretation. (Simple problems)

UNIT -IV:
Break Even Analysis: Concept of Break Even Point, Cost –Volume –Profit analysis, Determination of Break Even Point, Margin of Safety and P/V ratio. (Simple problems)
Capital Budgeting: Capital and its significance, types of capital, estimation of fixed and working capital requirements, methods and sources of raising capital. Capital budgeting: features proposals, methods of capital budgeting, Payback method, Accounting Rate of Return (ARR), Net Present Value Method (NPV). (Simple problems)

Codes/Tables: Present Value Tables need to be permitted into the examination Hall.

Reference Books:

1. Dr.S.N.Maheswari. Sultan Chand ,Financial accounting , 2009
2. Prasanna Chandra, Financial Management , TMH, New Delhi.
3. I M Pandey, Financial Management ,2nd edition ,Vikas Publishing House, New Delhi.
4. Van Horn, James c, Financial Management and Policy , Prentice Hall of India,1977.
5. Khan and Jain, Financial Statement Analysis, PHI, 2009
6. Sundhindra Bhat , Financial Management , Excel:2009

MCA I Semester	L	T	P	[C]
	0	0	3	[2]

(13MC106) COMPUTER ORGANIZATION LAB

Objective

- To make implement the common problems through the Assembly programming Language.

EXPERIMENTS LIST:

1. Verification of truth tables of Logic Gates
2. TTL characteristics
3. Verification of Demorgan's Laws
4. Implementation of Adders and Subs tractors
5. Verification of Flip-Flops (RS, JK, D, T)
6. Design of 3-to-8 Decoder
7. Encoder
8. Multiplexer
9. De-Multiplexer
10. A computer uses RAM chips of 1024 X 1 capacities.
    a. How many chips are needed, and how should their address lines be connected to provide a memory capacity of 1024 bytes?
    b. How many chips are needed to provide a memory capacity of 16K bytes?
11. A computer employs RAM chips of 256X8 and ROM chips of 1024 X 8. The computer needs 2K bytes of RAM, 4K bytes of ROM, and four interface units, each with four registers. A memory-mapped I/O configuration is used. The two highest-order bits of the address bus are assigned 00 for RAM, 01 for ROM, 10 for interface registers.
    a. How many RAM and ROM chips are needed?
    b. Draw a memory-address map for the system.
    c. Give the address range in hexadecimal for RAM, ROM and interface.
12. Obtain the complement function for the match logic of one word in an associative memory. Draw the logic diagram for it and compare with the actual match logic diagram.
13. A two-way set associative cache memory uses blocks of four words. The cache can accommodate a total of 2048 words from main memory. The main memory size is 128K X 32.
    a. Formulate all pertinent information required to construct the cache memory.
    b. What is the size of the cache memory?
14. A digital computer has a memory unit of 64K X 16 and a cache memory of 1K words. The cache uses direct mapping with a block size of four words.
    a. How many bits are there in each word of cache, and how are they divided into functions? Include a valid bit.
    b. How many bits are there in the tag, index, block, and word fields of the address format?
    c. How many blocks can the cache accommodate?
15. An address space is specified by 24 bits and the corresponding memory space by 16 bits.
    a. How many words are there in the address space?
    b. How many words are there in the memory space?

c. If a page consists of 2K words, how many pages and blocks are there in the system?

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

Page	Block
0	3
1	1
4	2
6	0

ASSEMBLY LANGUAGE PROGRAMMING

Write assembly language programs for the following using MASAM.

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

7. Write an assembly language program to encrypt digits as shown below:
   Input digit: 0 1 2 3 4 5 6 7 8 9
   Encrypted digit: 4 6 9 5 0 3 1 8 7 2
   The program should accept a string consisting of digits. The encrypted string should be displayed using "int xx" of 8086.
8. Write a procedure to locate a character in a given string. The procedure receives a pointer to a string and character to be located. When the first occurrence of the character is located, its position is

returned to main. If no match is found, a negative value is returned. The main procedure requests a character string and a character to be located and displays the result.

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

ex. Input: Advanced Programming in UNIX

Output:

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

Reference Books:

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

MCA I Semester	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13MC107) C PROGRAMMING LAB

Objective: The objective of this lab is to make student learn techniques for attacking and writing C programs for various types of problems. The emphasis should be on writing correct and efficient programs in C. The programs should include all the ones suggested below but should not be limited to them only. The examiner need not stick to these programs only in the examination.

EXPERIMENTS LIST:

Basic Techniques:

1. Swapping of the contents of two variables
2. Finding the sum of digits of a given number
3. Reversing a given number.

Decision Making:

4. Finding the largest and the smallest of a given array
5. Solving a quadratic equation
6. Selecting an operation based on a menu.

Looping Techniques and Arrays:

7. Finding the sum to n terms of a sine series
8. Matrix Multiplication- Transpose
9. Polynomial addition- Polynomial Multiplication
10. Sorting

11. Searching

Characters and String Handling:

12. Finding the length of string
13. Reversal of string
14. Concatenation of two strings
15. Checking whether it is a palindrome or not
16. Converting upper case alphabets to lowercase and vice versa in a string.

Pointers, Structures and Unions:

17. Finding the sum of all elements of an array using pointers
18. Swapping the contents of two variables using pointers
19. Finding the first and second rank holders and printing their names and roll numbers, in a class of 60 students using structures
20. Defining a complex number as structure and wring a program to illustrate the operations on complex numbers
21. Some examples of Unions.

Files and other Topics:

22. Copying and concatenation of files
23. Bit wise operations
24. Command line parameters
25. C preprocessor directives
26. Macros.

Text Books:

1. Ashok N. Kamthane, Programming with ANSI and Turbo C, Pearson Education, New Delhi,2002.
2. R. G. Dromey, How to Solve it by Computer, Prentice Hall Of India Ltd, New Delhi, 1982.

Reference Books:

1. M. G. Venkateshmurthy, Programming techniques through C, Pearson Education, New Delhi.
2. Ashok N. Kamthane, Programming with ANSI and Turbo C, Pearson Education, New Delhi.
3. Byron s Gottfried, Programming with C, Schaum's Outline series, Tata McGraw Hill. Publishing Company, New Delhi.

MCA I Semester	**L**	**T**	**P**	**[C]**
	0	**0**	**3**	**[2]**

(13MC108) I.T.WORKSHOP AND ACCOUNTING LAB

Objectives: The IT Workshop for engineers is a training lab course spread over 40 hours. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel and Power Point.

EXPERIMENTS LIST:

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the

required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. **The students should work on working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible.**

Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email.

Productivity tools module would enable the students in crafting professional word documents, excel spread sheets and power point presentations. (**Recommended to use Microsoft office 2007 in place of MS Office 2003)**

PC Hardware

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

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

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

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

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

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

Internet & World Wide Web

Exercise 7 - Task 1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Exercise 8 - Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

MS Word

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

MS Excel

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

MS Power Point

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

References:

9. Vikas Gupta, Comdex Information Technology course tool kit, WILEY Dream tech
10. Cheryl A Schmidt, The Complete Computer upgrade and repair book,3rd edition, WILEY Dreamtech
11. Evans Et Al, Introduction to Information Technology, 1/e, ITL Education Solutions limited, Pearson Education.
12. Kate J. Chase , PC Hardware and A+Handbook , PHI (Microsoft)
13. Leslie Lamport, LaTeX Companion , PHI/Pearson.
14. David Anfinson and Ken Quamme, IT Essentials PC Hardware and Software Companion Guide Third Edition, CISCO Press, Pearson Education.
15. Patrick Regan, IT Essentials PC Hardware and Software Labs and Study Guide, Third Edition, CISCO Press, Pearson Education.
16. S.J.Bigelow , Troubleshooting, Maintaining and Repairing PCs, 5th edition,TMH.

COMPUTERIZD ACCOUNTING TALLY LAB

Objectives: To make the student to implement the common accounts problems with the software called Tally.

EXPERIMENTS LIST:

6. Creation of company, Accounts Configuration, Classification of Accounts using Tally.
7. Accounts Masters, Accounts Voucher - Voucher Entry, conversion, Interest Calculation, Printing of voucher using Tally.
8. Create a Contra Voucher, Payment and Receipt Voucher using Tally.
9. Create Sales and Purchase Voucher, Credit notes and Debit notes using Tally.
10. Create Trading Account, Profit / Loss Account, Balance Sheet using Tally.

Text Books:

3. Dinesh Maidasani , Accounting with Tally 9.0, laxmi publications.
4. Namrata Agrawal , Financial Accounting on Computers Using Tally, 2000.

MCA II Semester	**L**	**T**	**P**	**[C]**
	4	**0**	**0**	**[4]**

(13MC201) SYSTEMS PROGRAMMING

Objectives:

- To make Understand what is system programming.
- To let the student get thorough about macro processors.
- To make Understand about loaders and compiler.

UNIT –I:

Introduction to Systems Programming: Machine Structure - Machine and Assembly Language Programming with IBM 360/370 - Grammars -Types of Grammars –Languages, FSM
Assemblers: Concepts of Single Pass, Two- Pass and Multi- Pass Assemblers, Design of a Single and Two-Pass Assembler.

UNIT- II:
Macros and Macro Processors: Definition - Types of Macros - Macro Instructions - Features of Macro Facility like conditional Macro Expansion - Macros Calls within Macros - Macro Definitions within Macros - Design of **Macro Processors**: Single-Pass and Two-Pass.

UNIT- III:
Loaders: Absolute Loader - Relocation Loader - Binders - Dynamic Loading and Linking – Design of Absolute Loader and Direct Linking Loaders.

UNIT- IV:
General Model of Compiler: Phase of a Compiler - Detailed Discussion of different Phases
Introduction to Software Tools: Text editors, Interpreters, Program Generators, Debug Monitors.

Text Books:
1. John J. Donovan, Systems Programming, Tata Mc Graw Hill, 2001.

Reference Books:

1. Dhamdhere , System Programming and Operating Systems & System Programming, IInd Revised Edition, Tata Mc Graw Hill.,
2. Leland. L. Beck, System Software, Pearson Education.

MCA II Semester	**L**	**T**	**P**	**[C]**
	4	**0**	**0**	**[4]**

(13MC202) DATA STRUCTURES

Objectives:
- Understand basic data structures such as arrays, lists, stacks, queues, trees, hash tables, search trees.
- Choose the appropriate data structure for a specified application.
- Implement various searching and sorting algorithms in C++.
- Write programs in C++ to solve problems using data structures such as arrays, lists, stacks, queues, trees, hash tables, and search trees.

UNIT- I:
Basic concepts: Data types, Abstract Data types, Data Structures, Algorithms, Performance analysis-time complexity and space complexity, Asymptotic Analysis-Big O, Omega and Theta notations, Basic concepts of STL(Standard Template Library)-Containers, Iterators, Algorithms.
Introduction to Linear and Non Linear data structures, Linear data structures-Linear Lists, Sequential and linked allocation, The list ADT, array and linked implementations, Singly Linked Lists-Operations-

Insertion,Deletion,DoublyLinkedLists-Operations-Insertion,Deletion,Circularly linked lists.
Representation of single, two dimensional arrays, sparse matrices and representation.
Stack ADT, Definition, operations array and linked implementations, applications-infix to postfix conversion, Postfix expression evaluation, recursion implementation, Queue ADT, definitions, operations, array and linked representations, circular queues, Insertion and deletion operations, Deque(Double ended queue)ADT, array and linked implementations.

UNIT- II:
Non Linear data structures- Trees – Basic Terminology, Binary tree ADT, array and linked representations, traversals, threaded binary trees, Priority Queue ADT- Implementation, Heaps.
Graphs – Introduction, Basic Terminology, Graph Representations- Adjacency matrix, Adjacency lists, Graph traversals-DFS and BFS.

UNIT- III:
Searching – Linear Search, Binary Search. Hashing - Introduction, hash tables, hash functions, collision resolution methods, comparison of searching methods.
Sorting: Bubble sort, insertion sort, selection sort, radix sort, quick sort, merge sort, heap sort, comparison of sorting methods.

UNIT- IV:
Search trees – binary search trees, definition, ADT, implementation, operations – searching, insertion, deletion, AVL trees (definition and example only), B- trees, definition, B tree of order m, operations – insertion and searching, introduction to Red – Black and Splay trees (Elementary treatment – only definition and examples), comparison of search trees, pattern matching algorithm – The Knuth – Morris – Pratt algorithm, Text comparison – Huffman coding algorithm, Tries (example only)

Text Books:

1. S.Sahni, Data structures, Algorithms and Applications in C++, University Press, 2005.
2. Adam Drozdek , Data structures and algorithms in C++, 3rd Edition, Cengage Learning, 2005.
3. Mark Allen Weiss, Data structures and Algorithm Analysis in C++, Pearson Education. Ltd.,

Reference Books:

1. Michael T.Goodrich, R.Tamassia and D.Mount , Data structures and Algorithms in C++, Wiley student edition, John Wiley and Sons.
2. L.Nyhoff, ADTs, Data structures and problem solving with c++, second edition, Pearson (Prentice Hall)
3. D.S. Malik, Data Structures using C++, Cengage Learning, India Edition.
4. W.H.Ford and W.R.Topp, Data structures with c++ using STL, 2nd edition, Pearson (Prentice Hall)
5. V.H.Patil, Data Structures using C++, Oxford University Press.
6. Langsam, Augenstein and Tanenbaum, Data structures using C and C++, PHI.

MCA II Semester	L	T	P	[C]
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(13MC203) OPERATING SYSTEMS

Objectives:

- To make Understand overview of how the operating system functions.
- To let the student get an idea on cpu scheduling, memory management.
- To make Understand about file system.
- To make understand about deadlocks management.

UNIT –I:

Operating System Introduction, Structures - Simple Batch, Multi programmed, time-shared, Personal Computer, Parallel, Distributed Systems ,Real-Time Systems , System components, Operating-System services, System Calls, Virtual Machines, System Design and Implementation.

UNIT- II:

Process and CPU Scheduling - Process concepts and scheduling, Operation on processes, Cooperating Processes, Threads, and Interposes Communication Scheduling Criteria, Scheduling Algorithm, Multiple - Processor Scheduling, Real-Time Scheduling.

UNIT- III:

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

UNIT- IV:

File System Interface and Implementation -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management, Directory Management, Directory Implementation, Efficiency and Performance.

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

Text Books:

1. Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Operating System Principles, 7th Edition, John Wiley
2. Andrew. S. Tanenbaum, Distributed Operating System, PHI.

Reference Books:

1. Crowley, Operating System A Design Approach, TMH.
2. Stallings , Operating Systems – Internals and Design Principles, Fifth Edition, Pearson Education/PHI,2005.

MCA II Semester

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(13MC204) PRINCIPLES OF PROGRAMMING LANGUAGES

Objectives:

- To make Understand about the various principles, guidelines and background algorithms that was to be implemented while creating the programming constructs.

UNIT –I:

A survey of Programming Paradigms**, Imperative Programming:** Names, Bindings, and Type Checking; Scopes.

UNIT -II

Data Types: Primitive Data Types, Character String Type, User-Defined Ordinal Types, Array Types, Record Types, Union Types, Set Types, and Pointer Types

UNIT- III:

Statement-Level Control; Subprograms, Abstract Data Types.

UNIT- IV:

Support for Object-Oriented Programming, Functional Programming, Logic Programming, Scripting Languages

Text Books:

1. Robert W. Sebesta, "Concepts of Programming Languages", Seventh Edition, Pearson Education, 2009.

Reference Books:

1. Terrence W. Pratt & Mervin V. Zelkowitz, "Programming Languages Design and Implementation",Fourth Edition, Pearson Education , 2008.
2. Kenneth C. Louden, "Programming Languages Principles and Practice", Second Edition, Cengage Learning, 2008.

MCA II Semester	L	T	P	[C]
	4	0	0	[4]

(13MC205) ORGANIZATIONAL STRUCTURES AND PERSONNEL MANAGEMENT

Objectives:

- To make Understand how a organization functions.
- To make Understand how man power planning, training and development in organizations.
- To make understand the human resource planning in organizations.

UNIT- I:

Introduction to Management: Concepts of Management– nature, importance and functions and theories of management, systems approach to management, leadership styles and social responsibilities of management.

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

UNIT- II:

Decision Process Approach: Parts of organization system, development of corporate strategy, dynamics of decision, role of system. Types of models: mathematical planning models, deterministic and probabilistic models.

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

UNIT –III:

Man Power Planning: Need-strategies and limitations, manpower inventory, manpower forecasting, job description, recruitment, job specification and selection, interviewing techniques, transfers and promotion policies. **Training and Development:** Objectives and policies planning, organizing the training department, training manager and his job, on and off the job training techniques, career planning, objectives of performance appraisal.

UNIT- IV:

Understanding Human Behavior: Personality – Johari Window – Transactional Analysis. Perception: Perceptual process, Development of Attitudes and Values, Understanding Group Dynamics, Team Effectiveness, Strategies to deal with conflicts and stress. **Contemporary Strategies:** Total Quality Management (TQM), six sigma, people capability maturity model (PCMM) levels, performance management, business process outsourcing (BPO), business process re-engineering, bench marking and balanced score card.

Text Books:

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

Reference Books:

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

MCA II Semester

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(13MC206) OPERATING SYSTEMS LAB

Objectives:

- To let the student implement the various operating system functionalities through the C programming language.

List of Sample Problems/Experiments:

1. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority

2. Simulate all file allocation strategies
   a) Sequential b) Indexed c) Linked

3. Simulate MVT and MFT

4. Simulate all File Organization Techniques
   a) Single level directory b) Two level c) Hierarchical d) DAG

5. Simulate Bankers Algorithm for Dead Lock Avoidance

6. Write a C program to create a child process and allow the parent to display "Hello" and the child to display "Welcome" on the screen.

7. Simulate all page replacement algorithms such as
   a) FIFO b) LRU c) LFU

8. Simulate Paging Technique of memory management.

9. Write C programs that make a copy of a file using
   i) standard I/O and ii) system calls

10. Write C programs that count the number of blanks in a text file using
    i) standard I/O ii) system calls.

11. Write C programs to implement Assemblers and Macro Processors

Reference Books:

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

MCA II Semester	L	T	P	[C]
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(13MC207) DATA STRUCTURES USING C++ LAB

Objectives:

- To let the student implement the various Data Structures with C++ language.

EXPERIMENTS LIST:

1. Write C++ programs to implement Stack ADT using an array.
2. Write C++ programs to implement Queue ADT using an array
3. Write a C++ program that reads an infix expression, converts the expression to postfix form.
4. Write a C++ program that evaluates the postfix expression (use stack ADT).
5. Write a C++ program to implement circular queue ADT using an array.
6. Write a C++ program that uses stacks to test whether the given string is a palindrome.
7. Write a C++ program to add two Sparse Matrices.
8. Write a C++ program that determines whether parenthetic symbols ( ), { } and < > are nested correctly in a string of characters (use stack ADT or otherwise).
9. Write C++ programs to implement singly linked list.
10. Write C++ programs to implement Stack ADT using Singly Linked Lists.
11. Write C++ programs to implement Queue ADT using Singly Linked Lists.
12. Write C++ programs to implement the dequeue using Doubly Linked List.
13. Write a C++ program to perform the following operations:
    a) Insert an element into a binary search tree.
    b) Delete an element from a binary search tree.
    c) Search for a key element in a binary search tree.
14. Write C++ programs to traverse the binary tree in
    a) Pre order b) In order and c) Post order.
15. Write C++ programs for the implementation of BFS and DFS for a given graph.
16. Write C++ programs for implementing the following sorting methods:
    a) Bubble sort b) Selection sort C) Insertion sort d) Quick sort e) Merge sort
17. Write C++ programs to implementing the following searching methods:
    a) Linear search b) Binary search

Reference Books:

1. Yaswant Kanetkar, Data Structures Through C++.
2. Aaron M.Tenenbaum, Data Structures Through C and C++, 2nd edition, 2007.
3. Balaguruswamy, Data Structures through C++.

MCA II Semester	L	T	P	[C]
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(13MC208) SOFT SKILLS LAB

Objectives: To equip students with effective speaking and listening skills in English, help them develop the soft skills and people skills which will make them to excel in their jobs and enhance to students' performs at placement interviews.

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

Reference:

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

MCA III Semester	L	T	P	[C]
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(13MC301) DATABASE MANAGEMENT SYSTEMS

Objectives:

- To make Understand Data base architecture.
- To let the student get clear knowledge on relational models and computations of data.
- To make Understand SQL queries.
- To understand about Transaction management.

UNIT- I:

Data Base System Applications, Database system vs File System, view of data, data abstraction, instances and schemas, Data models – ER-model, Relational Model, other models, Database Languages – Data base access for application Programs – Transaction Management – Storage Manager – The Query Processor – History of Database Systems. Database design and ER diagrams, Beyond ER entities, Attributes, Entity sets, Relationships and Relationship Sets, Additional features of ER model, Conceptual design of ER model.

Relational Model: Introduction to relational model, Integrity constraint over relations, Enforcing integrity constraints, Querying Relational Data, Logical Database Design, Introduction to views, Destroying/ Altering tables and views.

Relational Algebra and Calculus: Relational algebra, Selection and Projection set operations, renaming, joins, divisions, examples. Relational Calculus, Domain relational calculus, Tuple relational calculus, Expressive power of Algebra and Calculus.

UNIT –II:

Form of basic SQL Queries: Examples of basic sql queries, introduction to nested queries, correlated nested queries set, comparison operators, Aggregative Operators, null values, comparison using null values, Logical Connectivities, AND, OR, NOR, Impact on SQL constructs, Outer Joins, Disallowing NULL Values, Complex Integrity Constraints in SQL Triggers, Active Databases.

Schema Refinement: problems caused by redundancy, decompositions, problems related to decompositions, Reasoning about normal forms, BCNF, lossless join decomposition, Dependency preserving decomposition, schema refinement in data base design, multi values dependencies, Fourth normal form.

UNIT- III:

Overview of Transaction Management: ACID properties, Transactions and Schedules, Concurrent Execution of Transaction, Lock based concurrency control, performance locking, Transaction Support in SQL, introduction to crash recovery.

Concurrency Control: Serializability and recoverability, Introduction to lock management, Lock Conversions, Dealing with deadlocks, Specialized Locking Techniques, Concurrency without locking.

Crash Recovery: Introduction to ARIES, the Log and other Recovery related structures, the write ahead log protocols, check pointing, recovering from a system crash, media recovery, other approaches and interactions with concurrency control.

UNIT- IV:

Overview of Storage and Indexing: Data on external storage, File organization and indexing, Cluster indexes, primary and secondary indexes, Index Data Structures, Hash based Indexing, Tree based indexing, comparison of file organizations, indexes and Performance tuning.

Overview of Query Evaluation: The system catalogue, introduction to operator evaluation, algorithm for relational operations. Tree Structured Indexing: Intuitions for tree indexes, Indexed Sequential Access Methods (ISAM), B+ Trees: a dynamic indexed structure. Hash based indexing: static hashing, extendable hashing, linear hashing and extendable Vs Linear hashing.

Text Books:

1. Raghu Ramkrishnan, Gehrke, "Database Management Systems", TMH
2. Korth, Sudarshan,Silberschatz, "Database System Concepts".

Reference Books:

1. Elmasari , Navathe, "Fundamentals of Database Systems",
2. Thomas Connolly, Carolyn Begg, "Database Systems, A Practical Approach to Design, Implementation & Management" .
3. Han, Kamber, Pei, "Data Mining : Concepts Techniques".
4. Gertz, Jajodia , "Handbook of Database Security, Applications and Trends".

MCA III Semester	**L**	**T**	**P**	**[C]**
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(13MC302) SOFTWARE ENGINEERING

Objectives:

- To make Understand about the common steps of Software Engineering.
- To let the student get thorough knowledge on requirement analysis and software design.
- To make Understand about testing strategies and quality management.

UNIT- I:

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, legacy software, Software myths.

A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models. Process models: The waterfall model, Incremental process models, Evolutionary process models, specialized process models, The Unified process.

UNIT- II:

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods.

UNIT- III:

Design Engineering: Design process and Design quality, Design concepts, the design model, pattern based software design. Creating an architectural design: software architecture, Data design, Architectural styles and patterns, Architectural Design, assessing alternative architectural designs, mapping data flow into software architecture. Modeling component-level design: Designing class-based components, conducting component - level design, Object constraint language, designing conventional components.
Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT- IV:
Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.
Product metrics: Software Quality, Frame work for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance. Metrics for Process and Products: Software Measurement, Metrics for software quality.
Risk management: Reactive vs Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.
Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

Text Books:
1. Roger S Pressman, Software Engineering: A practitioner's Approach, sixth edition. McGraw-Hill International Edition, 2005
2. Ian Somerville, Software Engineering, seventh edition, Pearson education, 2004.

Reference Books:
1. Pankaj Jalote, Software Engineering, A Precise Approach, Wiley India, 2010.
2. Waman S Jawadekar, Software Engineering: A Primer, Tata McGraw-Hill, 2008
3. Rajib Mall, Fundamentals of Software Engineering, PHI, 2005
4. Deepak Jain, Software Engineering, Principles and Practices, Oxford University Press.
5. Diner Bjorner, Software Engineering1: Abstraction and modeling, Springer International edition, 2006.
6. Diner Bjorner, Software Engineering2 : Specification of systems and languages, Springer International edition , 2006.
7. Yingxu Wang,Software Engineering Foundations, Auerbach Publications,2008.

MCA III Semester

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(13MC303) DESIGN AND ANALYSIS OF ALGORITHMS

Objectives:

- To make Understand general concepts in designing an algorithm.
- To let the student get thorough knowledge on dynamic programming, branch and bound techniques.
- To make Understand about decision trees.

UNIT-I:

Introduction: Notion of Algorithm – Algorithmic Problem solving –Important Problem Types-Fundamental Data Structures-Analysis of Algorithm Efficiency-Analysis framework – Asymptotic notations – Analysis of Non-recursive and recursive algorithms - Empirical Analysis of algorithms-Algorithm Visualization, Limitations of Algorithms.

UNIT-II:

Brute Force-Selection Sort and Bubble Sort- Sequential Search and Brute Force String matching-Closet Pair and Convex Hull Problems-Exhaust Search, Divide and Conquer- Merge sort – Quick Sort – Binary search – Large integer Multiplication and Stassen's Matrix multiplication-closest pair and convex Hull problems.

UNIT-III:

Divide and conquer, Decrease By a Constant Algorithms-Insertion Sort-DFS and BFS-Topological sorting-Generating Combinatorial Objects-Decrease by a Constant factor Algorithms- variable size Decrease Algorithms- Transform and conquer- Horner's Rule and Binary Exponentiation – Problem Reduction

UNIT-IV:

Dynamic Programming- Wars hall's and Floyd's Algorithm – Optional Binary Search Trees – knapsack Problem - Prim's and kruskal's Algorithms - Dijkstra's Algorithm- Huffman Trees.

Decision Trees – NP hard and NP Complete problems-, Branch and Bound- Approximation Algorithms for NP – hard problems

Text Books:

1. Horowitz and Sahni, Fundamentals of Computer Algorithms, Galgothia Publications.
2. Anany Levitin, Introduction to the Design and Analysis of Algorithms, Pearson Education, 2003.

Reference Books:

1. Cormen, Leiserson and Rivest, Introduction to Algorithms, Prentice Hall of India.

MCA III Semester	L	T	P	[C]
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(13MC304) JAVA PROGRAMMING

Objectives:

- To make Understand about how to write programs through java.
- To let the student get thorough knowledge on inheritance, packages, interfaces, util package, files, networking, exception handling.

UNIT- I:

Java Basics - History of Java, Java buzzwords, data types, variables, scope and life time of variables, control flow-block scope, conditional statements, loops, break and continue statements, simple java program, arrays, input and output, Review of OOP concepts, encapsulation, inheritance, polymorphism, classes, objects, constructors, methods, parameter passing, static fields and methods, access control, this reference, overloading methods and constructors, recursion, garbage collection, building strings, exploring string class.

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

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

UNIT- II:

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

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

Files – streams- byte streams, character streams, text Input/output, random access file operations, Using java.io.

UNIT –III:

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

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

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

UNIT- IV:

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

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

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

Text Books:

1. Herbert Schildt, Java: the complete reference, 7th editon, TMH.

2. K.Somasundaram, Advanced Programming in Java2, Jaico Publishing House.

Reference Books:

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

MCA III Semester	L	T	P	[C]
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(13MC305) OPERATIONS RESEARCH

Objectives:

- To make Understand about linear programming problems and dual problem.
- To make Understand network models, replacement models, game theory.

UNIT- I:

Introduction To Operations Research: Basics definition, scope, objectives, phases, models and limitations of Operations Research.

Linear Programming: Problem, Formulation and Graphical solution of Linear Programming Problem. Simplex Method, Artificial variables Techniques, big -M method, two -phase simplex method, degeneracy and unbound solutions.

Dual Problems: Relation between primal and dual problems – Dual simplex method

UNIT –II:

Transportation Problem: Formulation, solution, unbalanced Transportation problem. Finding basic feasible solutions, North-West corner rule, least cost method and Vogel's approximation method. Optimality test – MODI Method.

Assignment Model: Formulation, Hungarian method for optimal solution, solving unbalanced problem, Traveling salesman problem as assignment problem.

UNIT- III:

Sequencing Models: Solution of Sequencing Problem, Processing n Jobs through two machines, Processing n Jobs through three machines, Processing two Jobs through m machines, Processing n Jobs through m Machines.

Network Models: Definitions– CPM and PERT – Their Algorithms Integral Programming. Branch and Bound Algorithms - Cutting plane algorithm.

UNIT IV

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

Game Theory: Two person Zero Sum Games – Mixed strategy games and their Algorithms.

Text Books:

1. A. M. Natarajan, P. Balasubramani, A. Tamilarasi, Operations Research, Pearson Education, India, 2006.
2. S. D. Shama , Operation Research, Tata McGraw Hill, New Delhi, 2009.

Reference Books:

1. J. K. Sharma, Operations Research – Theory and Applications, 3rd edition, Macmillan India Ltd, India, 2007.
2. R. Panneerselvam, Operations Research, 2nd edition, Prentice Hall of India, India, 2008.

MCA III Semester	L	T	P	[C]
	0	0	3	[2]

(13MC306) DATABASE MANAGEMENT SYSTEMS LAB

Objectives:

- To let the student implement the basic commands of SQL and write triggers through oracle.

EXPERIMENTS LIST:

1. Data Definition, Table Creation, Constraints.
2. Insert, Select Commands, Update and Delete Commands.
3. Nested Queries and Join Queries.
4. Views.
5. High level programming language extensions (Control structures, Procedures and Functions).
6. Front end Tools.
7. Forms.
8. Triggers.
9. Menu Design.
10. Reports.
11. Database Design and implementation (Mini Project).

MCA III Semester	L	T	P	[C]
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(13MC307) JAVA PROGRAMMING LAB

Objectives:

- To let the student implement the various types of problems through the java programming language.

List of Sample Problems/Experiments

JAVA PROGRAMS:

1. The Fibonacci sequence is defined by the following rule:
   The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

2. a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
   b) Write a Java program to multiply two given matrices.

c) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)

3. Write a Java program to illustrate method overloading.

4. Write a Java program to sort a list of names in ascending order.

5. Write a Java program to perform the following operations:

a) Concatenation of two strings. b) Comparison of two strings.

6. Write a Java program that makes frequency count of letters in a given text.

7. Write a Java program that uses functions to perform the following Operations:

a) Inserting a sub-string in to the given main string from a given position.
b) Deleting n characters from a given position in a given string.

8. a) Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.

b) Write a Java program to make frequency count of words in a given text.

9 .a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.

b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

c) Write a Java program that displays the number of characters, lines and words in a text file.

10. a) Develop an applet in Java that displays a simple message.

b)Develop an applet in Java that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named “Compute” is clicked.

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

12. Write a Java program for handling mouse events.

13. a) Write a Java program that creates three threads. First thread displays “Good Morning” every one second, the second thread displays “Hello” every two seconds and the third thread displays “Welcome” every three seconds.

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

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

15**.** Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. (Use java.net)

16. a) Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts.
    b) Write a Java program that allows the user to draw lines, rectangles and ovals.

17. Write a Java program that illustrates the following
    a) Creation of simple package. b) Accessing a package. c) Implementing interfaces.

18. Write Java programs that illustrates the following
    a) Handling predefined exceptions b) Handling user defined exceptions

19. Write Java programs that use both recursive and non-recursive functions for implementing the following searching methods:
    a) Linear search b) Binary search

20. Write a Java program for handling Key events.

21. Write Java programs for implementing the following sorting methods:
    a) Bubble sort b) Quick sort c) Selection sort d) Insertion sort

Note: You may use packages like java.io, java.util, java.net, java.awt etc in solving the Above Java problems.

Reference Books:

1. C.Horstman , Gary Cornel, Core Java 2, Vol I, Fundamentals, 7th Edition, Pearson Education.
2. C.Horstman, Gary Cornel, Core Java 2, Vol 2, Fundamentals, 7th Edition, Pearson Education.
3. Y.Daniel Liang, Introduction to Java programming, Sixth edition, pearson Education.

MCA III Semester	**L**	**T**	**P**	**[C]**
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(13MC308) SEMINAR-I

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

For the seminar, the student shall collect the information on a specialized relevant topic and prepare a report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the Department Committee consisting of Head of the department, Seminar Supervisor and a Senior Faculty Member. Each Seminar shall be evaluated for 100 marks with a break up of 20 marks for report, 20 for subject content, 40 for presentation and 20 for queries.

MCA IV Semester

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(13MC401) COMPUTER NETWORKS

Objectives:

- Understand the basic concepts of data communications and computer networks
- Understand Internet and principles of the TCP/IP protocol suite.
- Understand LANs, Wireless LANs and WANs
- Understand the network security concepts.

UNIT- I:

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

UNIT- II:

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

UNIT- III:

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

UNIT- IV:

Transport Layer: Process to process delivery, UDP and TCP protocols, SCTP, data traffic, congestion, Congestion control, Qos, integrated services, differentiated services ,Qos in switched networks.
Application Layer: Domain name space, DNS in internet, electronic mail, FTP, WWW, HTTP, SNMP, multi-media, network security

Text Books:

1. Behrouz A .Forouzan ,Data Communication and Networking, Fourth Edition, TMH.
2. Andrew S Tanenbaum ,Computer Network, 4th Edition, Person Education.

Reference Books:

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

MCA IV Semester	L	T	P	[C]
	4	0	0	[4]

(13MC402) LINUX PROGRAMMING

Objectives:

- Understand the utilities of linux and bourne shell.
- Understand linux files and process.
- Understand about linux signals, interprocess communication.
- Understand the network security concepts, sockets.

UNIT- I:

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

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

UNIT- II:

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

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

UNIT- III:

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

Interprocess Communication: Introduction to IPC, IPC between processes on a single computer System, IPC between processes on different systems, pipes, FIFOs, Introduction to three types of IPC (Linux) - message queues, semaphores and shared memory. Message Queues- Kernel support for messages, Linux APIs for messages, client/server example. Semaphores- Kernel support for semaphores, Linux APIs for semaphores, file locking with semaphores.

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

UNIT IV

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

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

Text Books:

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

Reference Books:

1. O'Reilly ,Linux System Programming, Robert Love, First Edition, 2007.
2. W.R.Stevens ,Unix Network Programming, PHI.
3. Graham Glass, King Ables ,Unix for programmers and users, 3rd Edition, Pearson Education, 2003.
4. W.R.Stevens ,Advanced Programming in the Unix environment, 2nd Edition, Pearson Education.
5. A. Hoover, System Programming with C and Unix, Pearson Education.
6. Kumar Saurabh,Unix Programming, 1st Edition, Wiley India pvt Ltd.

MCA IV Semester	L	T	P	[C]
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(13MC403) DATA WAREHOUSING AND DATA MINING

Objectives:

- Understand the basic concepts data ware house and how it is used for implementing the data mining.
- Understand about classification and clustering of data.

UNIT- I:

Introduction and Data Warehousing: Introduction, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation, Further Development, Data Warehousing to Data Mining

UNIT- II:

Data Preprocessing, Language, Architectures, Concept Description: Why Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.

UNIT- III:

Association rules: Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases.

UNIT IV

Classification And Clustering: Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Other Classification Methods, Prediction, Classifier Accuracy, Cluster Analysis, Types of data, Categorization of methods, Partitioning methods, Outlier Analysis.

Recent Trends: Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, World Wide Web, Applications and Trends in Data Mining

Text Books:

1. J. Han, M. Kamber, “Data Mining: Concepts and Techniques”, Harcourt India / Morgan Kauffman, 2001.
2. v.pudi , p.radha Krishna ,” Data mining”, Oxford University press.

Reference Books:

1. Margaret H.Dunham, “Data Mining: Introductory and Advanced Topics”, Pearson Education 2004.
2. Sam Anahory, Dennis Murry, “Data Warehousing in the real world”, Pearson Education 2003.
3. David Hand, Heikki Manila, Padhraic Symth, “Principles of Data Mining”, PHI 2004.
4. W.H.Inmon, “Building the Data Warehouse”, 3rd Edition, Wiley, 2003.
5. Alex Bezon, Stephen J.Smith, “Data Warehousing, Data Mining & OLAP”, McGraw-Hill Edition, 2001.

MCA IV Semester

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(13MC404) ARTIFICIAL INTELLIGENCE
(ELECTIVE-I)

Objectives:

- Understand the basic concepts of how problems will be solved through artificial algorithms and the history.
- To understand various logical techniques for searching and pattern design procedures.

UNIT- I:

Introduction: AI problems, foundation of AI and history of AI intelligent agents: Agents and environments, the concept of rationality, the nature of environments, structure of agents, problem solving agents, problem formulation.

UNIT- II:

Searching: Searching for solutions, uniformed search strategies – Breadth first search, depth first Search. Search with partial information (Heuristic search) Greedy best first search, A* search Game Playing: Adversial search, Games, minimax, algorithm, optimal decisions in multiplayer games, Alpha-Beta pruning, Evaluation functions, cutting of search.

UNIT- III:

Knowledge Representation & Reasons logical Agents, Knowledge – Based Agents, the Wumpus world, logic, propositional logic, Resolution patterns in proportional logic, Resolution, Forward & Backward Chaining.

UNIT- IV:

first order logic, Inference in first order logic, propositional vs. first order inference, unification & lifts forward chaining, Backward chaining, Resolution.

Text Books:

1. Stuart Russel, Peter Norvig ,Artificial Intelligence – A Modern Approach,Second Edition, PHI/ Pearson Education.
2. E.Rich and K.Knight ,Artificial Intelligence , 2nd Edition,TMH.

Reference Books:

1. Patterson,Dan W,Artificial Intelligence and Expert Systems , PHI.

MCA IV Semester

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(13MC405) HUMAN COMPUTER INTERACTION
(ELECTIVE-I)

Objectives:

- Understand the basic concepts graphical user interface.
- Understand the design process and screen designing guidelines for user interface.
- Understand how to design windows, screens, software tools.

UNIT- I:

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

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

UNIT- II:

Design Process: Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, and understanding business junctions.

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

UNIT- III:

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

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

UNIT- IV:

Software Tools: Specification methods, interface – Building Tools.

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

Text Books:

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

Reference Books:

1. Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell Bealg, Human – Computer Interaction, Pearson.
2. PRECE, ROGERS, SHARPS Interaction Design, Wiley Dream tech,
3. Soren Lauesen, User Interface Design, Pearson Education.
4. D.R.Olsen, Human–Computer Interaction, Cengage Learning.

MCA IV Semester

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(13MC406) DESIGN PATTERNS
(ELECTIVE-I)

Objectives:

- Understand the basic concepts various design patterns and importance of it.
- Understand how to implement various design patterns and its behaviors on an application through a case study.

UNIT- I:

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

UNIT- II:

A Case Study: Designing a Document Editor: Design Problems, Document Structure, Formatting, Embellishing the User Interface, and Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary.

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

UNIT- III:

Structural Pattern Part-I: Adapter, Bridge, and Composite.

Structural Pattern Part-II: Decorator, Facade, Flyweight, Proxy.

UNIT- IV:

Behavioral Patterns Part-I: Chain of Responsibility, Command, Interpreter, and Iterator.

Behavioral Patterns Part-II: Mediator, Memento, Observer.

Behavioral Patterns Part-III (cont'd): State, Strategy, Template Method, Visitor, and Discussion of Behavioral Patterns.

Text Books:

1. Erich Gamma, Design Patterns, Pearson Education.
2. Eric Freeman-Oreilly-spd , Head First Design Patterns.

Reference Books:

1. Mark Grand , Pattern's in JAVA Vol-I, Wiley DreamTech.
2. Mark Grand , Pattern's in JAVA Vol-II ,Wiley DreamTech.
3. Mark Grand , JAVA Enterprise Design Patterns Vol-III , Wiley DreamTech.

MCA IV Semester

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(13MC407) COMPUTER GRAPHICS
(ELECTIVE-II)

Objectives:

- Understand the basic concepts of data communications and computer networks
- Understand Internet and principles of the TCP/IP protocol suite.
- Understand LANs, Wireless LANs and WANs

UNIT- I:

Introduction, Application areas of Computer Graphics, overview of graphics systems, video-display devices, and raster-scan systems, random scan systems, graphics monitors and work stations and input devices ,Output primitives: Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

UNIT- II:

2-D Geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

2-D Viewing: The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland – Hodgeman polygon clipping algorithm.

UNIT- III:

3-D Object representation: Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-spline curves, Bezier and B-spline surfaces. Basic illumination models, polygon rendering methods.

3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations, 3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

UNIT- IV:

Visible surface detection methods: Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods.

Computer animation: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

Text Books:

1. Donald Hearn and M. Pauline Baker, "Computer Graphics C version", Pearson education.
2. Foley, Van Dam, Feiner and Hughes, "Computer Graphics Principles & practice", second edition in C, Pearson Education.

Reference Books:

1. Zhigand xiang, Roy Plastock, "Computer Graphics Second edition", Schaum's outlines, Tata Mc Graw hill edition.
2. David F Rogers, "Procedural elements for Computer Graphics", Tata Mc Graw hill, 2nd edition.

MCA IV Semester

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(13MC408) NEURAL NETWORKS AND FUZZY SYSTEMS
(ELECTIVE-II)

Objectives

- Understand the concepts of Neural Networks and Fuzzy Systems.
- To understand how genetic algorithms and hybrid systems are implemented using neural networks and fuzzy systems.

UNIT- I:

Fuzzy Logic: Crisp set and Fuzzy set, basic concepts of fuzzy sets, membership functions. Basic operations on fuzzy sets, Properties of fuzzy sets, Fuzzy relations. Propositional logic and Predicate logic, fuzzy If – Then rules, fuzzy mapping rules and fuzzy implication functions, Applications.

UNIT- II:

Neural Networks: Basic concepts of neural networks, Neural network architectures, Learning methods, Architecture of a back propagation network, Applications.

UNIT- III:

Genetic Algorithms: Basic concepts of genetic algorithms, encoding, genetic modeling.

UNIT- IV:

Hybrid Systems: Integration of neural networks, fuzzy logic and genetic algorithms.

Text Books:

1. S. Rajasekaran and G.A.Vijaylakshmi Pai.. Neural Networks Fuzzy Logic, and Genetic Algorithms, Prentice Hall of India.
2. K.H.Lee., First Course on Fuzzy Theory and Applications, Springer-Verlag.

Reference Books:

1. J. Yen and R. Langari, Fuzzy Logic, Intelligence, Control and Information, Pearson Education.

MCA IV Semester

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(13MC409) DISTRIBUTED SYSTEMS
(ELECTIVE-II)

Objectives:

- Understand the concepts of Architecture and Characterization of Distributed Systems.
- To understand Inter process Communication and Object Remote Invocation.
- To understand the transaction management and concurrency control in distributed environment.

UNIT- I:

Classes Characterization of Distributed Systems: Introduction, Examples of distributed systems, Resource sharing and the Web, Challenges.

System models: Introduction, Architectural models, Fundamental models.

Networking and Internetworking: - Introduction, Types of network, Network principles, Internet protocols, Network case studies: Ethernet, Wireless LAN and ATM.

UNIT- II:

Classes Interprocess communication: Introduction, The API for the Internet protocols, External data representation and marshalling, Client-server communication, Group communication, Case study: Interprocess communication in UNIX.

Distributed Objects and Remote Invocation: Introduction, Communication between distributed objects, Remote procedure call, Events and notifications, Java RMI case study.

UNIT- III:

Classes Distributed File Systems: Introduction, File service architecture, Sun Network file system, The Andrew File System, Recent advances.

Name Services: Introduction, Name services and the Domain Name System, Directory and discovery services, Case study of the Global Name Service.

Time and Global States: Introduction, Clocks, events and process states, Synchronizing physical clocks, Logical time and logical clocks, Global states.

UNIT- IV:

Classes Coordination and Agreement: Introduction, Distributed mutual exclusion, Elections, Multicast communication.

Transactions and Concurrency Control: Introduction, Transactions, Nested transactions, Locks, Optimistic concurrency control, Timestamp ordering, Comparison of methods for concurrency control.

Classes Distributed Transactions: Introduction, Flat and nested distributed transactions, Atomic commit protocols, Concurrency control in distributed transactions, Distributed deadlocks, Transaction recovery.

Replication: Introduction, system model and group communication, Transactions with replicated data.

Text Books:

1. George Coulouris, Jean Dollimore, Tim Kindberg, Distributed Systems – Concepts and Design, Pearson Education.

Reference Books:

1. Andrew S. TenenBaum, and Marten Van Steen, Distributed Systems – Principles & Paradigms, Pearson Education.
2. Pradeep Sinha, Distributed Operating Systems, PHI

MCA IV Semester	**L**	**T**	**P**	**[C]**
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(13MC410) LINUX PROGRAMMING LAB

Objectives:

- To make the student implement the shell programming functionality using C language in Linux operating system and to implement various commands of unix.

EXPERIMENTS LIST:

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

write 3 messages to it with different priority numbers.

22. Write a C program (receiver.c) that receives the messages (from the above message queue as specified in (21)) and displays them.

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(13MC411) DATA WAREHOUSING AND DATA MINING LAB

Objective:

The objective of the lab exercises is to use data mining techniques to identify customer segments and understand their buying behavior and to use standard databases available to understand DM processes using WEKA (or any other DM tool)

EXPERIMENTS LIST:

1. Gain insight for running pre- defined decision trees and explore results using MS OLAP Analytics.

2. Using IBM OLAP Miner – Understand the use of data mining for evaluating the content of multidimensional cubes.

3. Using Teradata Warehouse Miner – Create mining models that are executed in SQL.
(BI Portal Lab: The objective of the lab exercises is to integrate pre-built reports into a portal application)

4. Publish cognos cubes to a business intelligence portal. Metadata & ETL Lab: The objective of the lab exercises is to implement metadata import agents to pull metadata from leading business intelligence tools and populate a metadata repository. To understand ETL processes

5. Import metadata from specific business intelligence tools and populate a meta data repository.

6. Publish metadata stored in the repository.

7. Load data from heterogeneous sources including text files into a pre-defined warehouse schema.

Case study

8. Design a data mart from scratch to store the credit history of customers of a bank. Use this credit profiling to process future loan applications.

9. Design and build a Data Warehouse using bottom up approach titled ‘Citizen Information System’. This should be able to serve the analytical needs of the various government departments and also provide a global integrated view.

MCA IV Semester

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(13MC412) QUALITATIVE AND QUANTITATIVE ANALYSIS

Objectives: To determine and measure the one's ability thorough advanced training, some specific set of skills (intellectual, motor and so on), the subject assumes that professional potential and special abilities developed.

Unit – I:

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

Unit – II:

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

Unit – III:

Logical deductions, Non verbal reasoning

Logic – Statement-Arguments – Statement-Assumptions – Statement-Course of action – Statement-Conclusions – Deriving conclusion from passages – Theme deduction – Cause and effect reasoning

UNIT – IV:

Reading Comprehension- Purpose of reading, reading rates, improving comprehension skills, techniques for good comprehension, skimming, scanning, determining the meaning of words, different styles of worked out problems.

Text Books:

1. RS Agarwal , A textbook on Quantitative Aptitude.
2. RS Agarwal, A textbook on verbal and nonverbal reasoning .
3. Meenakshi Raman and Sangeeth Sarma, Technical Communication.

MCA V Semester	L	T	P	[C]
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(13MC501) OBJECT ORIENTED SYSTEMS DEVELOPMENT

Objectives:

- Understand the importance of UML in Modeling.
- Understand the classes, relationships and various model diagrams.

UNIT- I:

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

UNIT- II:

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

UNIT- III:

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

UNIT- IV:

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

Text Books:

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

Reference Books:

1.Craig Larman," Applying UML and Patterns- An Introduction to Object oriented Analysis and Design and Iterative Development", 3rd Edition, Pearson Education.
2.HansEriksson, Magnus, Penker, BrainLyons, DavidFado:UML2Toolkit, WILEY Dreamtech India Pvt.Ltd
3.Meilir , Page-Jones:Fundamentals of Object Oriented Design in UML,Pearson education
4.Atul Kahate, Object Oriented and Design,The McGraw-Hill Company.

MCA V Semester	L	T	P	[C]
	4	0	0	[4]

(13MC502) WEB TECHNOLOGIES

Objectives:

- Understand how to develop html, xml scripts to develop static web pages.
- Understand the architecture of java beans.
- Understand the characterization of web servers and clients.
- Understand how to access the data from data base through the java programs.

UNIT- I:

HTML Common tags - List, Tables, images, forms, Frames; Cascading Style sheets.
Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script
XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

UNIT- II:

Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK, Introspection, Using Bound properties, Bean Info Interface, Constrained properties, Persistence, Customizes, Java Beans API, Introduction to EJB's.
Web Servers and Servlets: Tomcat web server, **Introduction** to servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servlet Package, Reading Servlet parameters, and Reading Initialization parameters. The javax.servlet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues.

UNIT- III:

Introduction to JSP: The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat
JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations.

UNIT- IV:

Database Access: Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

Text Books:

1. Chris Bates ,Web Programming, building internet applications, 2nd edition, WILEY Dreamtech
2. Herbert Schildt ,The complete Reference Java Seventh Edition, TMH.
3. Hans Bergsten, SPD O'Reilly ,Java Server Pages

Reference Books:

1. web-Sebesta, Programming world wide, Pearson
2. Dietel and Nieto ,Internet and World Wide Web – How to program, PHI/Pearson Education Asia.
3. Bill Siggelkow, S P D O'Reilly ,Jakarta Struts Cookbook.

MCA V Semester

	L	T	P	[C]
	4	0	0	[4]

(13MC503) SOFTWARE TESTING METHODOLOGIES

Objectives:

- Understand Flow graphs and Path Testing.
- Understand Transaction Flow Testing and Domain Testing.
- Understand Logic based testing.
- Understand state graphs, transition testing.

UNIT- I:

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

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

UNIT- II:

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

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

UNIT-III:

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

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

UNIT-IV:

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

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

Text Books:

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

Reference Books:

1. Brian Marick ,The craft of software testing , Pearson Education.
2. Edward Kit, Software Testing in the Real World ,Pearson.
3. Perry, John Wiley, Effective methods of Software Testing.
4. Meyers, John Wiley ,Art of Software Testing .

MCA V Semester	L	T	P	[C]
	4	0	0	[4]

(13MC504) CLOUD COMPUTING
(ELECTIVE-III)

Objectives:

- Understand the cloud computing platforms around us and virtualization technology.
- Understand organization of data in the cloud.
- Understand the cloud computing security architecture and challenges.

UNIT- I:

Introduction to Cloud Computing, Definition, Characteristics, Components, Cloud provider, SAAS, PAAS, IAAS and Others, Organizational scenarios of clouds, Administering & Monitoring cloud services, benefits and limitations, Deploy application over cloud, Comparison among SAAS, PAAS, IAAS

Cloud computing platforms: Infrastructure as service: Amazon EC2,Platform as Service: Google App Engine, Microsoft Azure, Utility Computing, Elastic Computing Introduction to Cloud Technologies, Study of Hypervisors Compare SOAP and REST.

Web services, AJAX and mashups-Web services: SOAP and REST, SOAP versus REST, AJAX: asynchronous 'rich' interfaces, Mashups: user interface services

Virtualization Technology: Virtual machine technology, virtualization applications in enterprises, Pitfalls of virtualization

Multitenant software: Multi-entity support, Multi-schema approach, Multitenance using cloud data stores, Data access control for enterprise applications

UNIT- II:

Data in the cloud: Relational databases, Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo.

Map-Reduce and extensions: Parallel computing, The map-Reduce model, Parallel efficiency of Map-Reduce, Relational operations using Map-Reduce, Enterprise batch processing using Map-Reduce, Introduction to cloud development, Example/Application of Map reduce, Features and comparisons among GFS,HDFS etc, Map-Reduce model

UNIT- III:

Cloud security fundamentals: Vulnerability assessment tool for cloud, Privacy and Security in cloud.

Cloud computing security architecture: Architectural Considerations- General Issues, Trusted Cloud computing, Secure Execution Environments and Communications, Micro-architectures; Identity Management and Access control Identity management, Access control, Autonomic Security.

UNIT- IV:

Cloud computing security challenges: Virtualization security management-virtual threats, VM Security Recommendations, VM-Specific Security techniques, Secure Execution Environments and Communications in cloud. Cloud computing platforms, Installing cloud platforms and performance evaluation Features and functions of cloud platforms: Xen Cloud Platform, Eucalyptus, Open Nebula, Nimbus, TPlatform, Apache Virtual Computing Lab (VCL), and Enomaly Elastic Computing Platform.

Text Books:

1. Judith Hurwitz, R.Bloor, M.Kanfman, F.Halper ,Cloud Computing for Dummies , Wiley India Edition
2. Gautam Shroff, Enterprise Cloud Computing , Cambridge
3. Ronald Krutz and Russell Dean Vines, Cloud Security ,Wiley-India

Reference Books:

1. Scott Granneman, Google Apps ,Pearson
2. Tim Malhar, S.Kumaraswammy, S.Latif ,Cloud Security & Privacy ,SPD,O'REILLY.
3. Antohy T Velte et.al., Cloud Computing : A Practical Approach, McGraw Hill,
4. Barrie Sosinsky, Cloud Computing Bible ,Wiley India
5. Stefano Ferretti et.al.,QoS–aware Clouds, 2010 ,IEEE 3rd International Conference on Cloud Computing

MCA V Semester	**L**	**T**	**P**	**[C]**
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(13MC505) CRYPTOGRAPHY AND NETWORK SECURITY
(ELECTIVE-III)

Objectives:

- Understand various cryptographic algorithms.
- Understand public –key cryptosystem.
- Understand the fundamental ideas of public-key cryptography.
- Discuss Web security and Firewalls

UNIT-I:

Attacks on Computers and Computer Security: Introduction, the need for security, security approaches, principles of security, types of security attacks, security services, security mechanisms, a model for network security. Cryptography: Concepts and Techniques, introduction, plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, steganography, key range and key size, possible types of attacks.

UNIT- II:

Symmetric Key Ciphers: Block cipher principles and algorithms (DES, AES, BlowFish), Differential and Linear Cryptanalysis, Block cipher modes of operation, stream ciphers, RC4, Location and placement of encryption function, key distribution. Asymmetric key ciphers: principles of public key cryptosystems, algorithms (RSA, Diffie-Hellman, ECC), key distribution.

UNIT- III:

Message Authentication Algorithms and Hash Functions: Authentication requirements, Functions message authentication codes, hash functions, secure hash algorithm, whirlpool, HMAC, CMAC, Digital Signatures, Knapsack Algorithm. Authentication Applications: Kerberos, X.509 authentication service, Public, key infrastructure, biometric authentication.

UNIT- IV:

E-mail Security: pretty good privacy, S/MIME IP Security: IP Security overview, IP Security architecture, authentication header, encapsulating security payload, combining security associations, key management. **Web Security**: Web security considerations, secure socket layer and transport layer security, secure electronic transaction intruders, Virus and Firewalls: Intruders, Intrusion detection, password management, virus and related threats, counter measures, firewall design principles, types of firewalls, **Case Studies on Cryptography and Security**: secure inter branch payment transactions, cross site scripting vulnerability, virtual elections.

Text Books:

1. William Stallings ,Cryptography and Network Security, 4th Edition ,Pearson Education.
2. Atul Kahate, Cryptography and Network Security, 2nd Edition ,Mc Graw Hill,.

Reference Books:

1. WM. Arthur Conklin, Greg White, Principles of Computer Security, TMH.
2. Bernard Menezes, Network Security and Cryptography, CENGAGE Learning.

MCA V Semester	L	T	P	[C]
	4	0	0	[4]

(13MC506) E-COMMERCE
(ELECTIVE-III)

Objectives:

- Understand the common framework of E-commerce applications.
- Understand Electronic payment systems.
- Understand consumer searching and resource discovery in multimedia.

UNIT- I:

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

UNIT -II:

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

UNIT- III:

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

UNIT- IV:

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

Text Books:

1. Whinston, Frontiers of electronic commerce ,Kalakata, Pearson.
2. Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley ,E-Commerce fundamentals and applications.

Reference Books:

1. S.Jaiswal, Galgotia, E-Commerce.
2. Efrain Turbon, Jae Lee, David King, H.Michael Chang ,E-Commerce.
3. Gary P.Schneider ,Electronic Commerce ,Cengage Learning.

MCA V Semester

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(13MC507) MOBILE APPLICATION DEVELOPMENT (ELECTIVE-IV)

Objectives:

- Understand the environment of small computing technology.
- Understand various J2ME architecture and development environment.
- Understand JDBC objects in J2ME and Embedded SQL.

UNIT- I:

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

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

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

J2ME Best Practices and Patterns*:* The Reality of Working in a J2ME World, Best Practices **Commands, Items, and Event Processing:** J2ME User Interfaces, Display Class, The Palm OS Emulator, Command Class, Item Class, Exception Handling

UNIT- II:

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

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

UNIT- III:

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

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

UNIT- IV:

JDBC and Embedded SQL: Model Programs, Tables, Indexing, Inserting Data into Tables, Selecting Data from a Table, Metadata, Updating Tables, Deleting Data form a Table, Joining Tables, Calculating Data, Grouping and Ordering Data, Sub queries, VIEWs.

Generic Connection Framework: The Connection, Hypertext Transfer Protocol, Communication Management Using HTTP Commands, Session Management, Transmit as a Background Process.

Text Books:

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

Reference Books:

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

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	4	0	0	[4]

(13MC508) INFORMATION RETRIEVAL SYSTEMS
(ELECTIVE-IV)

Objectives:
On completion of this course you should have gained a good understanding of the foundation concepts of information retrieval techniques and be able to apply to apply these concepts into practice. Specifically, you should be able to:

- Use different information retrieval techniques in various application areas
- Apply IR principles to locate relevant information from large collections of data
- Implement retrieval systems for web search tasks.

UNIT- I:
Boolean retrieval .The term vocabulary and postings lists. Dictionaries and tolerant retrieval. Index Construction, Index compression

UNIT- II:
Scoring term weighting and the vector space model. Computing scores in a complete search system. Evaluation in information retrieval. Relevance feedback and query expansion.

UNIT- III:
XML retrieval. Probabilistic information retrieval. Language models for information retrieval. Text Classification . Vector space classification.

UNIT – IV:
Support vector machines and machine learning on documents. Flat clustering. Hierarchical clustering. Matrix decompositions and latent semantic indexing. Web search basic. Web crawling and indexes. Link analysis.

Text Books:
1. Christopher D.Manning and Prabhakar Raghavan and Hinrich Schutze, Introduction to Information Retrieval, Cambridge University Press,2008.

Reference Books:
1. Kowalski, Gerald, Mark T Maybury ,Information Storage and Retrieval System: Theory and Implementation, Springer
2. Ricardo Baeza-Yates, Modern Information Retrieval , Pearson Education,2007.
3. David A Grossman and Ophir Frieder ,Information Retrieval: Algorithms and Heuristics, 2nd Edition, Springer,2004

MCA V Semester

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(13MC509) SOFTWARE PROJECT MANAGEMENT
(ELECTIVE-IV)

Objectives:

- Understand the importance of conventional software management.
- Understand life cycle phases and artifacts of the process.
- Understand the project organizational responsibilities.
- Understand project control and process instrumentation.
- Understand tailoring the process and estimate future software Project management.

UNIT- I:

Conventional Software Management: Waterfall model, Conventional Software Management performance.

Evolution of Software Economics: Software economics, Pragmatic software cost estimation.

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections

The Old way and the new: The principles of conventional software Engineering, Principles of modern software management, transitioning to an iterative process.

UNIT- II:

Life cycle phases: Engineering and Production stages, Inception, Elaboration, Construction, Transition phases.

Artifacts of the process: The Artifact sets, Management artifacts, Engineering artifacts, Programmatic artifacts.

UNIT- III:

Model based software architectures: A Management perspective and technical perspective.

Work Flows of the process: Software process workflows, Iteration workflows.

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

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

UNIT- IV:

Project Organization and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

Project Control and Process instrumentation: The seven core Metrics, Management indicators, Quality indicators, Life cycle exceptions, Pragmatic Software Metrics, Metrics automation

Tailoring the Process: Process discriminants.

Future Software Project Management: Modern Project Profile, Next generation Software economics, Modern process transitions.

Text Books:

1. Walker Royce, Software Project Management, Pearson Education,

2005.
2. Joel Henry, Software Project Management, Pearson Education.

Reference Books:

1.Walker Royce, Bob Hughes and Mike Cotterell , Software Project Management, Tata McGraw-Hill Edition.
2.Pankaj Jalote, Software Project Management in practice, Pearson Education 2005

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(13MC510) OBJECT ORIENTED SYSTEMS DEVELIOMENT (USING UML) LAB

Objectives:

To implement the UML diagrams for various domains of applications of software and make the student to design any type of application through UML.

Draw the UML diagrams for the following Applications:

1) Quiz Application
2) ATM Application
3) Online Railway Reservation System
4) Student Marks Analysis Application
5) Bank Simulated Company Application
6) Auction Application
7) E-Clinic Application
8) Point Of Sale Application
9) E- seva Application
10) Note Management System Application
11) Online Student Course Application
12) Corporate Recruitment System Application
13) Library System Application

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(13MC511) WEB TECHNOLOGIES LAB

Objective: To create a fully functional website with mvc architecture. To develop an online Book store using we can sell books (Ex amazon .com).

Hardware and Software required:

1. A working computer system with either Windows or Linux
2. A web browser either IE or Firefox
3. Tomcat web server and Apache web server
4. XML editor like Altova Xml-spy [www.Altova.com/**XML**Spy – free] , Stylus studio , etc.,
5. A database either Mysql or Oracle
6. JVM(Java virtual machine) must be installed on your system
7. BDK(Bean development kit) must be also be installed

I) Design the following static web pages required for an online book store web site.

1) **HOME PAGE:**

The static home page must contain three **frames**.

Top frame : Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

Left frame : At least four links for navigation, which will display the catalogue of respective links. For e.g.: When you click the link **"CSE"** the catalogue for **CSE** Books should be displayed in the Right frame.

Right frame: The *pages to the links in the left frame must be loaded here*. Initially this page contains description of the web site.

<table>
<tr><td>Logo</td><td colspan="4">Web Site Name</td></tr>
<tr><td>Home</td><td>Login</td><td>Registration</td><td>Catalogue</td><td>Cart</td></tr>
<tr><td>CSE
ECE
EEE
CIVIL</td><td colspan="4">Description of the Web Site</td></tr>
</table>

2) LOGIN PAGE:

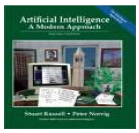
Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Login : Password:			
	Submit	Reset		

This page looks like below:

3) CATOLOGUE PAGE:

The catalogue page should contain the details of all the books available in the web site in a table.
The details should contain the following:

Snap shot of Cover Page.
Author Name.
Publisher.
Price.
Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL		Book : XML Bible Author : Winston Publication : Wiely	$ 40.5	Add to cart
		Book : AI Author : S.Russel Publication : Princeton hall	$ 63	Add to cart
		Book : Java 2 Author : Watson Publication : BPB publications	$ 35.5	Add to cart
		Book : HTML in 24 hours Author : Sam Peter	$ 50	Add to cart

		Publication : Sam publication		

4) CART PAGE**:**
The cart page contains the details about the books which are added to the cart.
The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	**Book name** Java 2 XML bible	**Price** $35.5 $40.5	**Quantity** 2 1	**Amount** $70 $40.5
			Total amount -	$130.5

5) REGISTRATION PAGE:
Create a "*registration form* "with the following fields

1) Name (Text field)
2) Password (password field)
3) E-mail id (text field)
4) Phone number (text field)
5) Sex (radio button)
6) Date of birth (3 select boxes)
7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
8) Address (text area)

II) VALIDATION:
Write *JavaScript* to validate the following fields of the above registration page.

6. Name (Name should contains alphabets and the length should not be less than 6 characters).
7. Password (Password should not be less than 6 characters length).
8. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

Note : validation of the login page can also be done with these parameters.

III) Design a web page using CSS (Cascading Style Sheets) which includes the following:

1) Use different font, styles:
In the style definition you define how each selector should work (font, color etc.).Then, in the body of your pages, you refer to these selectors to activate the styles.

For example:

[redacted]

2) Set a background image for both the page and single elements on the page.
You can define the background image for the page like this:

[redacted]

3) Control the repetition of the image with the background-repeat property.

As background-repeat: repeat

Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4) Define styles for links as

A: link
A: visited
A: active
A: hover

Example:

```
<style type="text/css">
A: link {text-decoration: none}
A: visited {text-decoration: none}
A: active {text-decoration: none}
A: over {text-decoration: underline; color: red ;}
</style>
```

5) Work with layers:

For example:

LAYER 1 ON TOP:

```
<div style="position: relative; font-size:50px; z-index:2;">LAYER 1</div>
<div style="position: relative; top:-50; left:5; color: red; font-size:80px; z-index:1">LAYER 2</div>
```

LAYER 2 ON TOP:

```
<div style="position: relative; font-size:50px; z-index:3;">LAYER 1</div>
<div style="position: relative; top:-50; left:5; color: red; font-size:80px; z-index:4">LAYER 2</div>
```

6) Add a customized cursor:

Selector {cursor:value}

For example:

IV) Write an XML file which will display the Book information which includes the following:

1) Title of the book
2) Author Name
3) ISBN number
4) Publisher name
5) Edition
6) Price

Write a Document Type Definition (DTD) to validate the above XML file.

Display the XML file as follows.

The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.

Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.

Hint: You can use some xml editors like XML-spy

V) VISUAL BEANS:

Create a simple visual bean with a area filled with a color.

The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false.

The color of the area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the “property window “.

VI) Install TOMCAT web server and APACHE.

While installation assign port number 4040 to TOMCAT and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.

1) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root. Access the pages by using the urls : http://localhost:4040/rama/books.html (for tomcat) http://localhost:8080/books.html (for Apache)

VII) User Authentication:

Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Write a servelet for doing the following.

1. Create a Cookie and add these four user ids and passwords to this Cookie.

2. Read the user id and passwords entered in the Login form and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user (i.e., user-name and password match) you should welcome him by name (user-name) else you should display "You are not an authenticated user ".

Use init-parameters to do this. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters () method.

VIII) Install a database (Mysql or Oracle).

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

Practice 'JDBC' connectivity.

Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page.

IX) Write a JSP which does the following job:

Insert the details of the 3 or 4 users who register with the web site by using registration form. Authenticate the user when he submits the login form using the user name and password from the database.

X) Create tables in the database which contain the details of items (books in our case like Book name, Price, Quantity, Amount)) of each category. Modify your catalogue page in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using JDBC.

XI) HTTP is a stateless protocol. Session is required to maintain the state.

The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time (i.e., from different systems in the LAN using the ip-

address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate ()).Modify your catalogue and cart JSP pages to achieve the above mentioned functionality using sessions.

Reference Books:

1. Bayross and others, O'reilly,SPD ,Java Server Programming for Professionals, 2nd Edition, 2007.
2. Black Book, K. Santosh Kumar ,JDBC, Servlets, and JSP, dreamtech.
3. M.Hall and L.Brown ,Core Web Programming, 2nd Edition, Volume 1, PHPTR.
4. M.Hall and L.Brown ,Core Web Programming, 2nd Edition, Volume 2, PHPTR.
5. Horstman and Cornell ,Core Java, Volume 1, 8th Edition, Pearson Education, 2008.
6. Horstman and Cornell ,Core Java, Volume 2, , 8th Edition, Pearson Education, 2008.
7. J.Wiggles worth and P.McMillan,Thomson,Java Programming: Advanced Topics, 3rd Edition, , 2007.
8. SPD.S.Shah & V.Shah,The X Team ,Struts 2 for Beginners, 2nd edition .

MCA V Semester	**L**	**T**	**P**	**[C]**
	0	**0**	**1**	**[2]**

(13MC512) SEMINAR-II

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

For the seminar, the student shall collect the information on a specialized relevant topic and prepare a report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the Department Committee consisting of Head of the department, Seminar Supervisor and a Senior Faculty Member. Each Seminar shall be evaluated for 100 marks with a break up of 20 marks for report, 20 for subject content, 40 for presentation and 20 for queries.

MCA VI Semester	L	T	P	[C]
	0	0	0	[16]

(13MC601) PROJECT WORK

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

COMPUTING FACILITIES:

- Number and Configuration of Systems
- Total number of systems connected by LAN
- Total number of systems connected to WAN
- Internet bandwidth
- Major software packages available
- Special purpose facilities available

ANNEXURE-II

WORKSHOP: **Available**

- List of facilities available.

  Games and Sports Facilities **YES**

  Extra Curriculum Activities**YES**

  Soft Skill Development Facilities **YES**

Built-Up Area

Particulars	**Building with RCC Roof (Sq.M)**
Instructional Area (Carpet Area)	**13752.00**
Administrative Area (Carpet Area)	**1862.48**
Amenities (Carpet Area)	**4055.99**
Circulation & Others	**5191.68**
Total	**24862.43**

Teaching Learning process

- Central Examination Facility Available and Two Rooms were Exclusively Allotted for this purpose with all facilities like internet, fax, photo stat copiers etc. This Examination Cell is headed by Professor In-charge.

- **Curricula and syllabi for each of the programmes as approved by the University.**

  - As per BOS and ACC approved Curricula and syllabi

- Teaching Load of each Faculty

  Professors : 09 hrs per week

Associate Professors : 15 hrs per week
Assistant Professors : 24 hrs per week

- Internal Continuous Evaluation System and place

  - The Internal Examinations are conducted five(5) in every semester for II, III & IV years B.Tech students
  - The Internal Examinations are conducted Six(6) for I Year B.Tech Students

- Students' assessment of Faculty, System in place.

  - We adapt students Feed back system for every semester and also students counseling is adapted all through the year.

For each Post Graduate programme give the following:

i. Title of the programme
ii. Curricula and Syllabi **NOT APPLICABLE**
iii. Faculty Profile

SI	*Name*	Designation	Subject Teaching
1.	**NOT APPLICABLE**		
2.			

- Brief profile of each faculty.
  - Laboratory facilities exclusive to the PG programme

Special Purpose

- Software, all design tools in case
- Academic Calendar and frame work
- Research focus
  List of typical research projects.
- Industry Linkage
- Publications (if any) out of research in last three years out of masters projects
- Placement status
- Admission procedure
- Fee Structure
- Hostel Facilities
- Contact address of co-ordinator of the PG programme
  Name:
  Address:
  Telephone:
  E-mail:

NOT APPLICABLE