

MCA PROGRAMME PROJECT REPORT

1. PROGRAMME MISSION AND OBJECTIVES

- **MISSION STATEMENT**

Anna University shall contribute to the educational, economic and social development by:

1. Producing students who are intellectually and technically equipped with well-defined knowledge, skills and ethics who are creative thinkers, inspiring leaders and contributing citizens.
2. Introducing high quality academic and research programs and providing extension services in cutting edge technologies
3. Ensuring a supportive campus climate with dynamic leadership and development opportunities to meet the needs of the students, faculty and staff.
4. Expanding global participation spread across continents with the aid of interactive satellite based education and the usage of digital library.

- **OBJECTIVES FOR THE PROGRAMME**

1. To prepare students to excel in computer applications to succeed in industry/ technical profession.
2. To provide students with solid foundation in mathematical and computing fundamentals and techniques required to solve related problems and also to pursue higher studies and research.
3. To train students with good computing breadth so as to comprehend, analyze, design and create computing solutions for the real life problems.
4. To provide the change management in Distance mode through inquiry based curriculum updating and with use of innovative E-Learning teaching aids.

- **INDUSTRIAL / LEARNERS DEMAND**

Computer applications is the most sought branch of knowledge pervading all walks of life and is the most dynamic academic field of specialization. IT, ICT and IT enabled services that is transforming today's lifestyle is going to make much more transformations, especially for a country like India, the fastest growing economies of the world. There is an ever growing demand for Computer Application specialists who are much sought after in every field of professional / industrial scenario today.

2. RELEVANCE OF THE PROGRAMME WITH HEI'S MISSION AND GOALS

- **HEI'S MISSION AND GOALS**

MISSION

Anna University shall strive towards a World Class Institution by producing professionals with high technical knowledge, professional skills and ethical values. The University shall be a preferred partner to the industry and community for contribution towards their economic and social development by providing high quality manpower through excellence in teaching, research and consultancy. Anna University shall be recognized as a point of reference, a catalyst, a facilitator, a trend setter and a leader in technical education.

GOALS

1. To constantly raise the quality of engineering education thereby to produce superior human resource to match rapid technological developments
2. To share its academic experience and infrastructure with other institutions for providing quality education across the State and help students to fulfill their dreams.
3. To uphold the highest ethical and professional standards while imparting engineering education and while fulfilling its obligations to students and staff.

- **PROGRAMMES OFFERED TO ACHIEVE HEI'S MISSION AND GOALS**

The Centre for Distance Education was established in 2006 to impart quality technical and professional education through distance learning that would provide competitive edge for students and working population in the global business environment. The Centre aims to develop and disseminate professional education to every nook and corner of the state that will foster economic and social development in line with the mission of the university and HEI. The programmes are designed with a broader vision to enhance the ability of the future managers to operate in an increasingly diverse environment.

3. NATURE OF PROSPECTIVE TARGET GROUP OF LEARNERS

1. The Programme is designed and intended primarily to meet the needs of working professionals for knowledge learning and for those who wish to broaden and deepen their understanding.
2. MCA programme provides a flexibility to the learner to continue their studies without compromising on quality of education and course content, as they are pursuing their professional work.

- **COMPOSITION OF THE TARGET GROUP**

1. This group of students who opt MCA through distance mode largely include working or self employed professionals in business, corporate companies and IT and IT enabled service industry.
2. Nevertheless, a good part of the enrolled students include fresh graduates who want to study at leisure or engaged at some other profession.

4. APPROPRIATENESS OF THE PROGRAMME TO ACQUIRE SPECIFIC SKILLS AND COMPETENCE

- **LEARNING OUTCOMES**

1. Graduates will have an ability to identify, formulate and implement computing solutions.
2. Graduates will have an ability to design and conduct experiments, analyze and interpret data.
3. Graduates will be able to design a system, component or process as per needs and specification.
4. Graduates will have the skill to work on multidisciplinary tasks and will be aware of the new and emerging disciplines.
5. Graduates will demonstrate skills to use modern tools, software and equipments to analyze problems.

- **SPECIFIC SKILLS ACQUIRED**

1. The MCA programme is designed to address the specific need based industrial requirements and impart students with specific skills that permit them address real life problems effectively.
2. This skill improvement based curriculum produces post graduates with exemplary competence in their field of specialization and makes them stand out from the crowd.

- **COMPETENCIES ACQUIRED**

1. Graduates will have an ability to identify, formulate and implement computing solutions.
2. Graduates will have an ability to design and conduct experiments, analyze and interpret data related software development projects.
3. Graduates will be able to design a system, component or process as per needs and specification of the clients.
4. Graduates will have the skill to work on multidisciplinary tasks and will be aware of the new and emerging disciplines that will impact development.

5. INSTRUCTIONAL DESIGN

Need based courses have been identified and the courses are developed. They have been fine-tuned taking into consideration industry/social requirements and also to educate rural people professionally. The course, curriculum and syllabi are designed and evaluated by a Departmental Committee and a Syllabus Subcommittee with experts both from academia and industry. The curriculum and syllabi is then placed in the Board of Studies of the faculty of Management Sciences for MBA. The finalized curriculum and syllabi are then placed in the Academic Council for the final approval. The governing body of the distance education ensures that the distance education curriculum has equivalent amount of credits as the regular programmes. In addition, electives have been introduced specifically for distance education programmes to suit the requirements of the dynamic changes taking place in the economy and Industry.

- **CURRICULUM DESIGN**

The course curriculum is completely revised periodically once every four years. However electives can be introduced as and when the need arises after obtaining necessary approvals from the appropriate academic bodies of the University. Approval of Board of Studies and Academic Council are obtained whenever modifications/additions are made in the existing curriculum and syllabi.

**ANNA UNIVERSITY
CENTRE FOR DISTANCE EDUCATION
MASTER OF COMPUTER APPLICATIONS
REGULATIONS - 2018 CURRICULUM**

SEMESTER - I

Course Title	Credits*	Marks
Mathematical Foundations of Computer Science	4	100
Problem Solving and Programming	2	100
Database Management System	2	100
Software Engineering	2	100
Computer Organization & Design	2	100
Programming Lab	2	100
Database Management System Lab	2	100
TOTAL	16	700

SEMESTER - II

Course Title	Credits*	Marks
Computer Networks	4	100
Operating System	2	100
Data Structures and Algorithms	2	100
Computer Graphics and Multimedia Systems	2	100
Object Oriented Programming	2	100
Data Structures using C++ Lab	2	100
Operating System Lab	2	100
TOTAL	16	700

SEMESTER - III

Course Title	Credits*	Marks
Web Programming	2	100
Object Oriented Analysis and Design	4	100
Data Warehousing and Mining	2	100
Security Practice	2	100
Elective I	2	100
Security Lab	2	100
Web Programming Lab	2	100
TOTAL	16	700

SEMESTER - IV

Course Title	Credits*	Marks
Unix and Network Programming	4	100
Enterprise Application Development	2	100
.NET Programming	2	100
Elective II	2	100
Elective III	2	100
Enterprise Application Development lab	2	100
.NET Programming Lab	2	100
TOTAL	16	700

SEMESTER - V

Course Title	Credits*	Marks
Web Services	2	100
Software Project Management	4	100
Mobile Application Development	2	100
Communication Skills	2	100
Elective IV	2	100
Web Services Lab	2	100
Mobile Application Development Lab	2	100
TOTAL	16	700

SEMESTER - IV

Course Title	Credits*	Marks
Elective V	2	100
Cloud Services	2	100
Project Work	12	200
TOTAL	16	400
Total No. of Credits and Marks	96	3900

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

ELECTIVES

ELECTIVE - I

Course Title	Credits*	Marks
Advanced Databases	2	100
TCP/IP Protocol Suite	2	100
Software Testing	2	100

ELECTIVE - II

Course Title	Credits*	Marks
Distributed Systems	2	100
Artificial Intelligence	2	100
Human Resource Management	2	100

ELECTIVE - III

Course Title	Credits*	Marks
Ethical Hacking and Cyber Forensics	2	100
E-Learning Management	2	100
Collaborative Web Design	2	100

ELECTIVE - IV

Course Title	Credits*	Marks
M - Commerce	2	100
Game Programming	2	100
Free / Open Source Software	2	100

ELECTIVE - V

Course Title	Credits*	Marks
Enterprise Resource Planning	2	100
Resource Management Techniques	2	100
Technology Commercialization & Transfer	2	100

- **DETAILED SYLLABI**

Enclosed vide Annexure I

- **DURATION OF THE PROGRAMME**

The minimum and maximum period for completion of the MCA Programme is given below:

Programme	Minimum No. of Semesters	Maximum No. of Semesters*
M.C.A.	6	18

*includes the period of break of study.

Break of study: If any candidate intends to temporarily discontinue the programme at any point of time during the programme for valid reason he/ she shall apply for break of study in the prescribed format with necessary documents to the Director, Centre for Distance Education not later than the last date for enrolling for the semester examination of that concerned semester. The candidates permitted to rejoin the programme after break of study / prevention due to lack of attendance, shall be governed by the Curriculum and Regulations in force at the time of rejoining.

- **FACULTY AND SUPPORT STAFF REQUIREMENT**

CDE is functioning with a Director, one Additional Director in the rank of full time Professor and three Deputy Directors in the rank of Associate Professors. The Additional Director and the Deputy Directors are in-charge of each of the academic programmes offered by the CDE. They are responsible for Curriculum & Syllabi Design, Identification of Course Writers and Reviewers and Editing of the Course material.

DIRECTOR

CDE is headed by the Director, who is a full time faculty member of the University appointed by the Vice-Chancellor of Anna University to facilitate the development, implementation and monitoring the programmes offered at CDE and to attend to all administrative matters concerned with the activities of the Centre.

Director is responsible for the following functions:

- Ensures programmes offered through distance education and the instructional design of each programme meet the educational standards of the University.
- Develop and implement policies and guidelines for effective delivery of distance education programmes.
- Co-ordinate with the Deputy directors, Regional Centres and Study Centres to respond swiftly to problems related to distance learning.
- Continuously monitor the student support services mechanism and incorporate technology based changes in the system to deliver services more effectively and efficiently.
- Supervise the staff at CDE, set priorities, assign work and conduct employee evaluations.
- Administer an effective financial discipline in line with the budget allocated by the University.

DEPUTY DIRECTOR

- Deputy Director is a full time faculty member of the University appointed by the Vice Chancellor of the Anna University to administer, monitor and take care of each of the program offered by the CDE.
- Oversees the implementation of the curriculum and the academic programs.
- Assist the Director, CDE in carrying out the academic calendar, starting with the admission process, preparation of the norms for study centres in conduct of classes, identification and managing faculty for contact classes.
- Monitors the internal and University evaluation process and attend all administrative matters concerning the program including the revision of electives and curriculum at appropriate timeline.
- Serve as convener of the Central Steering Committee, that completely monitors the project work, from approving the Guides for each semester, approve schedule project work, monitoring committee and help process the results for the University.
- Empowered by the University to operate the funds for the set assigned to them as well as the study centres of the CDE also.

FACULTY

- Handling MCA classes for the Distance Education students and guiding them for their project work.
- Assisting in the change of Regulations and Curriculum.
- Coordinating with all Study Centres, to maintain academic activities for all specializations including project work.
- Coordinating for the preparation of study materials for all semesters.
- Assisting in the admission work, counseling new students and other issues such as break of study, exemptions etc.
- Assisting the Central Steering Committee for the project work done by the end Semester students.
- Scrutinizing the list of project guides received from all the Study Centres to prepare approved list of guides.
- Preparation of Project Schedule and Report for first and second reviews.
- Co-ordinating with the Central Steering Committee members in the evaluation of project works of students, study centre, project guides and viva voce examinations.

SOFTWARE DEVELOPER

- A customized software has been created for the collection of fees and it has been integrated with dedicated accounting software to have consolidated report on receipts and payments with breakup.
- Refund of Caution Deposit is being made by NEFT based on their data provided in the application at the time of admission. To monitor and track the status of caution deposit application, a software has been designed.
- An integrated Student Tracking System has also been created which includes queries relating the Spelling Correction in the name, Change of Study Centre, Change of Specialization, Break of Study, Change of DOB, Request of Duplication ID card etc.

- An exclusive Software for recording and monitoring the students attendance has been created and uploaded in Anna University portal to enable Study Centres to feed their data through online within the prescribed time limit. After the completion of all the contact classes, prevention list is automatically generated by the software for submission to the Controller of Examinations. Fee receipts are also being generated automatically after duly verified regarding the students eligibility for subsequent semesters.

WEB DESIGNER CUM DEVELOPER

- Advertisement for admission are being uploaded in Anna University Website.
- Candidates those who are unable to come in person, they can download the application form from AU website, for which blank application has been uploaded and monitored by the web designers by assigning the application number etc.
- After the entrance examination, rank list cum counselling call letter is being uploaded. Candidate can download the counselling call letter after entering their registration number and date of birth.
- Semester Fee Schedule, Contact Classes and other details are uploaded in AU website regularly.
- Regulations & Syllabi, Previous years semester examination question papers and other online study materials are uploaded for the benefit of students.
- Study Centre related activities are also being uploaded for effective communication
Correspondence from the Controller of Examinations regarding examination, fee etc. are also being uploaded in AU website.

SUPPORT STAFF

Administrative staff i.e. Deputy Registrar, Assistant Registrar, Superintendent/Section Officer, Assistant are co-coordinating the activities of the Centre for the following activities with the assistance of other dedicated temporary Professional Assistants, Web Developers, Software Developer, Clerical Assistants, Office Assistants and menials.

ADMINISTRATION

- To prepare the advertisement for inviting applications for calendar year / academic ear admissions and hosting the advertisement in Anna University web portal.
- To identify the examination centre for the conduct of Entrance Test
- Allotment of candidates for the entrance examination
- Publishing the Rank list cum Call letter to the candidates to attend counselling session for admission
- Counselling for admission to distance education programmes
- Allotment of study centres to the candidates based on their choice
- Intimation of schedule for contact classes
- Disbursement of study centre charges to the Study Centres
- Disbursement of honorarium to the experts
- Purchase of Computers and other lab equipments
- Purchase of furniture and other office equipments

FINANCE

- Budget Estimates for every year are projected and submitted to the Finance Committee for approval.
- Expenditure being met based on the approved budgetary amount
- To monitor the cash flow, Centre is maintaining the mandatory finance and accounts registers such as Appropriation Register, Cash Book, Compilation Register, Advance Register, Cheque issue Register etc.
- Every year Annual Accounts for this centre being prepared and submitted to the Concurrent Audit Section for necessary audit.

MATERIAL DISTRIBUTION

- Material distribution is done at CDE office and a Professional Assistant who is qualified in library science is in-charge of maintaining and distributing study materials.
- Stock register is maintained for receipt and disbursement of study material. Orders are placed well in advance and CDE provides study material to the students immediately on the day they are admitted.
- The material issue is completely integrated and hence, once the student pays his/her fees in the subsequent semester, they become eligible to receive the books.
- At the end of every semester physical stock verification is done to ensure the quantity for which orders are to be placed in the subsequent semester.

- **INSTRUCTIONAL DELIVERY MECHANISM**

MCA program comprise six semesters of which the five semesters contain course work and the sixth one has a project work in addition.

The course work comprises the contact classes for each semester announced by the Study Centre Coordinator and courses enrolled are offered by the faculty members approved. The contact classes will be held during the week-ends, the Saturdays and Sundays.

The Laboratory courses also follow the same schedule.

Students are given two assignments during each semester for each course enrolled by the Course Instructors. Students should do this as take home assignments and submit at dates announced. Evaluation of the assignments will make up the Continuous assessment marks. Laboratory courses have manuals that provide explanation of algorithms and example problems to be solved by the students.

Students will write an end semester examination for the theory as well as practical subjects at the end of each semester by the Controller of Examinations, Anna University.

The project work will be done under the supervision of a Guide approved by the University.

- **MEDIA FOR DELIVERY**

The university adopts a unique methodology of instruction which is different from that being adopted for our regular mode programmes. The methodology is more learner - oriented and the students are expected to take active participation in the teaching learning process. The university follows a multimedia approach for delivering knowledge to the students.

Print Material : Self Learning Material which is self explanatory, self directed is developed and supplied to the students. The learning material is designed as per the credit structure of the programme. It is more interactive in that it contains learning objectives, learning activities and problem solving activities

for self assessment. The contents are divided into small sections and sub sections for effective learning and two way communication between the learner and the content.

E-learning Material: Power Point Presentation are prepared by the faculty at CDE and is uploaded in our website and made accessible to the students for all the courses of each programme.

Counseling Sessions: Counseling Sessions are held as per the schedule designed by the CDE well in advance prior to the conduct of classes. They are held on week-ends, i.e. Saturday and Sundays. The contact sessions are decided as per the credits allotted to each course in each programme. For example, four credit theory course is assigned 16 hours of contact session. The coordinator of the study centre shall ensure that contact classes are conducted as per the schedule and every academic counselor outlines the salient points and adopt a blended mode of learning making it more learner centered.

- **STUDENT SUPPORT SERVICE SYSTEM**

The CDE centre of Anna University has established four Regional Centres and seven Study Centres throughout Tamil Nadu . They are engaged in providing pre- admission counseling for potential learners, support for admission activities, act as information centres, distribute study material to the students admitted. Apart from providing counseling facilities they also act as examination centres.

Once a student gets admitted to CDE, the CDE headquarters creates a database with all the essential particulars that provides online solutions to all the student related queries.

The queries relating to Corrections in name, Change of Study Centres, Change of Specialization, Break of Study, Corrections in DOB, Refund of Caution Deposit, Issue of Duplicate ID Card are made by forms available online and are dealt with by the technical support team of CDE retrieving data from the database.

Each batch is assigned a set in charge who responds swiftly to all the demands of the students relating to that particular batch. The entire batch in charges and administrative staff are connected through intranet and every change made by them after the approval of the Director gets reflected in the database.

Information regarding Schedule of classes, Internal marks, End semester examination schedule are provided through study centers and is also available on the web. Model End semester question papers are also available on the web.

The End semester examination results are announced within a month after completion of the examinations and are available on the web.

6. PROCEDURE FOR ADMISSION, CURRICULUM TRANSACTION AND EVALUATION

- **ADMISSION PROCEDURE**

Students are admitted in two sessions every year; the Academic year batch during July session and Calendar year batch during January session. Advertisements are placed in media to invite applications for each session.

Admission in MCA program require any degree with mathematics / statistics as one of the subjects at the Degree level (or) Any degree with Mathematics

Apart from the basic eligibility, the candidate should pass in the Entrance Test conducted by Centre for Distance Education, Anna University, Chennai.

Students admission is done by the Centre for Distance Education, Anna University. Student enrolment is done programme wise in every year: **CY** - Calendar Year - (January Session) and **AY** - Academic Year - (July Session)

Blank application form can be downloaded from the web-site “annauniv.edu/cde” and the same may be filled up. The completed application along with the demand draft towards application fee should be sent “The Director, Centre for Distance Education, Anna University ” before the last date for receipt of application as prescribed from time to time.

Distance Entrance Exam TEST (DEET)

All candidates who have made an application should write the DEET on the specified date, except those who have a valid TANCET score.

The question paper will be designed to test the capability of the candidates in the following areas. Quantitative Ability, Analytical Reasoning, Logical reasoning, Computer awareness, There may be few questions on verbal activity, basic sciences. While evaluating the answers, one mark is awarded for each correct answer. No negative marks for wrong answers.

Candidates who are provisionally eligible for admission will be informed through counselling call letter based on their rank obtained in the DEET/TANCET.

Candidates or their authorized representative should attend the counselling with all original certificates with Demand Draft towards 1st semester fee.

Selection is based on the marks in the Entrance Test (DEET score) / TANCET score card. Based on the rank Study Centre/Specialization will be provisionally allotted through counselling as per their choice.

- **DELIVERY MECHANISM (WEB BASED)**

The contact classes are conducted at Class rooms available in the Headquarters of CDE, Regional centres and Study centres which are departments of the Anna University / Affiliated Colleges. The class rooms are equipped with facilities including multi-media projection systems, white boards, internet connectivity and smart boards. Each Centre is headed by a coordinator and assisted by counselors and faculty according to the strength of the students. On the Academic front, the functions of the staff through whom academic transaction takes place is shown below:

Staff	Functions
Study centre Coordinator Each study centre has a study centre coordinator The Study centre coordinator is either the Principal of the Institution or a Senior faculty member	In charge for all the students studying through the distance education scheme of Anna University Chennai. Is responsible for maintaining all accounts pertaining to the activities of the study centre Is responsible for receipt and distribution of course material

<p>Counselors</p> <p>The study centre coordinator is required to appoint separate counselors for each of the programmes of each set admitted.</p> <p>A Counselor can at a time be in charge for maximum of 4 batches of 60 students each</p> <p>The Counselor is a faculty member / visiting faculty of the respective programmes.</p>	<p>Is responsible for arranging senior faculty members to handle contact classes and/ or labs</p> <p>Is responsible for regular conduct of classes</p> <p>Is responsible for maintaining the attendance details of all students allocated to him/her</p> <p>Is responsible for collecting the internal assessment marks from all faculty handling classes and forwarding the same to the Coordinator</p>
<p>Faculty handling classes</p> <p>The study centre coordinator and counselor are expected to identify faculty from their own institution or from affiliated institutions for handling classes</p>	<p>Is responsible for teaching classes regularly according to the syllabus and clearing the doubts of the students.</p> <p>The course is all about presenting the material using PowerPoint to include insights and supporting data. Design principles for effective visuals and slides.</p> <p>Is responsible for taking attendance regularly</p> <p>Is responsible for conducting and evaluating periodic assessments for calculation of internal marks.</p>

- ACADEMIC PLANNER

MONTHS	WEEKS	ACADEMIC YEAR ACTIVITES	CALENDAR YEAR ACTIVITES
October	First	Semester begins for Academic year	-
	Third	Release of Guidelines for project work Online Registration begins	-
November	First	-	Publication of Advertisement for Calendar year batch
	Third	Last date for submission of Project proposal Online Registration closes	-
	Fourth	Updating the Project proposal status	-
December	First & Second	First Review of Project work	-
	Third	Last date for submission of 1st Review marks to CDE by study centres	-
	Fourth	Project - Updating the recommended status by CDE	-
January	First	Contact classes for Semester ends	-
		Attendance finalized, Prevented list generated	-
		Second Review of project work	-
	Third	Last date for submission of second Review marks to CDE by Study centres	-
	Fourth	Last date for sending the attendance, Internal Assessment and prevention list for Project work to COE	-
		Semester examination fee collection	-
February	First	-	Last date for receipt of MBA, MCA application for CY batch
		Project - Link opens for Online submission of project work	-
	Second	-	Conduct of Entrance Test for CY batch
		COE - End Semester Examination begins	
	Fourth	-	Entrance Test - Publication of result
		-	Last date for receipt of MSc (CS) application for CY batch
	Project work - Last date for Online submission (Full project - hard & CD). Last date to submit internal marks to COE and CDE by study centres.	-	
March	First	Last date for submission of Viva Voce panel to COE.	-
		Project - Viva voce Examination begins	Semester fee collection begins
	Second	End Semester examination ends	-
		-	Counseling & Admission for CY batch
	Third	Last date for sending Viva voce examination marks to COE	-

April	First	-	Semester begins for Calendar Year batch
	Third		Release of Guidelines for project work Online Registration begins
May	First	Publication of Advertisement for Academic year batch	
	Third		Last date for Submission of Project proposal Online Registration closes
	Fourth		Updating the Project proposal status
June	First & Second		First Review of Project work
	Third		Last date for submission of First Review marks to CDE by study centres
	Fourth		Project - Updating the recommended status by CDE
July	First		Contact classes for Semester ends
			Attendance finalized, Prevented list generated
			Second Review of project work
	Third		Last date for submission of Second Review marks to CDE by Study centres
	Fourth		Last date for sending the attendance, Internal Assessment and prevention list for Project work to COE
		Semester examination fee collection	
August	First	Last date for receipt of MBA, MCA application for AY batch	
			Project - Link opens for Online submission of project work
	Second	Conduct of Entrance Test for AY batch	
			COE - End Semester Examination begins
	Fourth	Entrance Test - Publication of result	
		Last date for receipt of MSc (CS) application for AY batch	
		Project work - Last date for Online submission (Full project - hard & CD). Last date to submit internal marks to COE and CDE by study centres.	
September	First		Last date for submission of Viva Voce panel to COE
		Semester fee collection	Project - Viva voce Examination begins
	Second		End Semester examination ends
		Counselling & admission for AY batch	
Third		Last date for sending Viva voce examination marks to COE	

EVALUATION PROCEDURE

Each course has internal and External evaluation to pass the course and earn credits.

INTERNAL EVALUATION

Periodical assignments are given and internal tests are conducted periodically. These assignments and tests are used to calculate the internal marks

COURSE EVALUATION

Type of Course	Internal Assessment	End Semester Examination
Theory	20%	80%
Practical	20%	80%
Project Work		
Internal Assessment	Evaluation of Project report by External Examiner	Viva-Voce Examination
20%	30%	50%

EXTERNAL EVALUATION

The End semester Examinations in case MBA/MCA/M.SC will be conducted during February and August months of each year by the Controller of the Examinations, Anna University. All the activities like paper setting, Conduct of examination, Declaration of results and Assessing the examination papers are done in-house by the Office of the Controller of Examinations, Anna University.

The question papers are set by experts in the respective fields of study. They are chosen from among a panel of experts (prepared from the list of teachers & experts sent by the various Universities and leading colleges). This is done directly by the confidential section of the Office of the Controller of Examinations.

There shall be one end semester examination of 3 hours duration for each theory course. The examinations shall ordinarily be conducted between May and July during the odd semesters and between November and January in the even semesters. For the practical examinations (including project work), both internal and external examiners shall be appointed by the Controller of Examination.

The end semester evaluation of the Project work will be based on the project report and a Viva-Voce Examination by a team consisting of the guide and External Examiner(s) who are appointed depending on the chosen areas of specialization of the students. The External Examiner(s) shall be appointed by the Controller of Examinations, Anna University Chennai.

If a student indulges in malpractice in any of the end semester / internal examinations, he / she shall be liable for punitive action as prescribed by the Director, Academic Courses as per the University regulations from time to time.

The End semester examinations are conducted by the Office of the Controller of Examinations, Anna University Chennai as per the method followed for regular programmes. The Examinations are conducted at various study centre / colleges in the region throughout the country by appointing a Chief Superintendent who in turn conducts the examination with the Hall invigilators from among the faculty of local colleges. The overall conduct is supervised by the Anna University representatives sent by the University.

A candidate who secures not less than 50% of total marks prescribed for the courses with a minimum of 50% of the marks prescribed for the end-semester Examination in both theory and practical courses shall be declared to have passed in the Examination.

If a candidate fails to secure a pass in a particular course he / she shall reappear for the examination till he / she secures a pass. However, the internal assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts.

A student who has passed any course / all the courses prescribed in the curriculum for the award of the degree shall not be permitted to re-enroll to improve his/her marks in a course or the aggregate marks respectively.

REVALUATION

Revaluation procedure is available for the students who opt for the same by paying Revaluation fee. Also Photocopies of Answer papers are given to the students who requires the same on payment of fees for the same.

A candidate can apply for revaluation of his/her semester examination answer paper in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations through the Coordinator of the Study Centre concerned and Director, Centre for Distance Education. The Controller of Examination will arrange for the revaluation and the results will be intimated to the candidate concerned through the Coordinator of the Study Centre. Revaluation is not permitted for practical courses and for project work.

Copies of the answer scripts for the theory course(s) can be obtained from the Controller of Examinations, Anna University on payment of fee specified for this purpose.

The final Project Report for all the programmes shall be submitted at the end of the final Semester as per the schedule announced by the Central Steering Committee. The Project Report prepared according to approved guidelines and duly signed by the guide(s) shall be submitted to Coordinator of Study Centre or Coordinating Centre. The final project report must also be submitted online as a word document to the Director, CDE on or before the specified date.

If the candidate fails to obtain 50% of the Continuous Assessment marks in the Project Work, he/she will not be permitted to submit the report and has to re-enroll for the same in the subsequent semester.

If the candidate fails to submit the Project Report on or before the specified deadline he/she is deemed to have failed in the Project Work and shall re-enroll for the same in a subsequent semester.

If the candidate fails in the viva-voce examination he/she shall re-enroll for the same in the subsequent semester.

• FINANCIAL ASSISTANCE

Financial Assistance is extended as follows:

- Tuition Fee is fully exempted for Differently abled persons provided they produce a certificate from the Chairman, District Medical Board in the prescribed format.
- 50% tuition fee concession is given to for regular staff members who are working in Anna University.

7. LABORATORY SUPPORT AND LIBRARY RESOURCES

• LABORATORY SUPPORT

The CDE has a Computer Lab with state-of-the-art infrastructure located in a spacious air conditioned hall, housing a local server, 84 personal computers connected by high speed Internet and wireless networks, LAN and printers, white board with multi-media projection facilities.

SERVERS WITH CONFIGURATION				
SL.NO.	SERVER MODEL	CONFIGURATION	SOFTWARE	USAGE
1	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS/ Oracle 10 g	Fees collection / book material stock/accounts/ Counseling
2	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS/ Oracle 10 g	Web server
3	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS /ASP.Net	Student Attendance / Student Management
4	Dell Power Edge R710	Intel Xeon Processor 2.00 GHz/8 GB RAM/ 1 TB Storage	Linux Ubuntu 14.04 / Windows 2008 Server OS/Oracle 10g/C++	Computer Lab
5	Wipro	Intel Xeon Processor 2.00 GHz/8 GB RAM/ 1 TB Storage	Windows 2008 Server OS	Web server backup

LAB COMPUTERS WITH CONFIGURATION

SL. NO.	COMPUTER MODEL	TOTAL NO. OF COMPUTER	CONFIGURATION	SOFTWARE
1	Dell	24 Nos.	Intel i7 processor /8 GB RAM/1 TB Storage	Windows 7 Professional OS/ D2K, C++, Putty, Java, Netbeans,
2	Acer	60 Nos.	Intel i5 processor /4 GB RAM/500 GB Storage	Android, MS Office, VB, Visual studio 2008

The Centre for Distance Education, Anna University Chennai utilizes the services of Ramanujan Computing Centre, the centralized computing facility available at the University in times of necessity.

In addition, the Centre for Distance Education, Anna University Chennai has the provision to utilize the services of Educational Multimedia Research Centre for studio facilities for preparation of Multimedia material.

• **LIBRARY RESOURCES**

The centre has an exclusive library which caters to the needs of the students of distance education. Library books are maintained in racks and shelves with glass doors. Library caters to the information needs to the faculty, and PG students. Books are available on the following areas of study

- Management Studies.
- Information & Communication Studies.
- Mathematics, Statistics & Computer Science Studies.
- General Knowledge & Languages.
- Competitive Examinations (TNPSC, UGC-NET, RRB, SSC, UPSC, etc.).
- Dictionaries and University annual magazines and daily news papers.

A stock register is maintained and all purchases and issues are registered in it. Books are maintained and issued with the help of a Library management system software designed for this purpose.

Books are available both for closed reference and also for issue. Students can borrow books returnable in two weeks time. Online reference is also made available to both staff and students.

Subject wise and title wise count for Library books:

SI No	Department (Programme)	No. of. Titles	No. of . books
1.	GENERAL	75	75
2.	MBA	566	2294
3.	MCA	142	439
4.	MSC	54	250
Total		837	3058

A Professional Assistant who is qualified Librarian is in-charge of the library of the CDE and the library is kept open on all working days.

8. COST ESTIMATION OF THE PROGRAMME

PAYMENTS	PROPOSED IN 2018-19
	AMOUNT (Rs.)
PROGRAMME DEVELOPMENT COST	1150000
Printing of Study Material	
Course Reviewer charges	
PROGRAMME DELIVERY COST	2500000
Study Centre charges	
PROGAMME MAINTENANCE COST	2368500
Remuneration to Csc committee Members	

Consolidated Pay for Visiting Faculty	
Entrance Test and Counselling expenses	
Wages / Emoluments for temporary staff members	
Postage and Telegrams	
Remuneration & Honorarium	
Stationery & Printing charges	
Advertisement charges	
INFRASTRUCTURE DEVELOPMENT COST	
Purchase of furniture and repairs	
Computer & other Accessories	
Purchase and maintenance of office equipments	1160000
Books & Periodicals	
Building & Amenities	
ADMINISTRATIVE COST	
fuel charges	
Contingencies	
Maintenance of Vehicles and hire charges	
Security & Housekeeping charges	
Refreshments and Hospitality	
Telephone charges	434500
Travel expenses	
Design & Development	
Conduct of meeting	
Civil Maintenance	
Electrical Maintenance	
TOTAL	7613000

9. QUALITY ASSURANCE MECHANISM AND EXPECTED OUTCOMES

EXECUTIVE COMMITTEE

The Centre for Distance Education of Anna University is governed by an Executive Committee, chaired by the Vice-Chancellor of the University. Executive Committee comprises of internal members from related departments of Anna University, subject experts from other Universities / Institutions and renowned management experts from industry.

The Executive Committee is convened once in 6 months to review the academic, administrative and finance related activities of the centre. The approval of Executive Committee is mandatory for all the ongoing activities and future development plans.

CENTRAL STEERING COMMITTEE

In addition to the CIQA, to ensure quality in the Project work CDE is already functioning with a Central Steering Committee for each programme headed by the Director , CDE and includes experts from our

University departments of the concerned Programmes. It is established to directly approve, monitor, track and administer the project work and its internal evaluation at the Centre for Distance Education, Anna University, Chennai.

CENTER FOR INTERNAL QUALITY ASSURANCE (CIQA)

In order to have a dynamic quality assurance system, CDE has established a Center for Internal Quality Assurance (CIQA), to carry out the various functions relating to maintenance of quality, continuous improvement, regular monitoring of academic and administrative activities, deciding the programme delivery mechanism and to oversee and report the effectiveness of the system specified in the UGC (ODL) regulations 2017.

10. REVIEW MECHANISM

CURRICULUM REVISION

As per Anna University policy, the Curriculum Revision takes place every four years. The curriculum Revision for MBA as per UGC ODL Norms 2017 was approved and will be implemented from 2018-19.

The faculty to teach the contact classes are selected as per University norms for teaching staff and approved by the Central Steering Committee appointed by the Vice Chancellor of the University.

STUDENTS FEEDBACK

Every semester the students of each batch are invited to provide an online “Student Feed Back” questionnaire form for each of the course studied by them. The questionnaire is designed to assess the quality of teaching, coverage of the syllabus, class room tools used, and overall conduct of classes and the infrastructure of the Study Centre concerned. All the feedback responses are pooled/evaluated for each course and is considered in the management of faculty for the next semester classes.

The students are free to meet the counselors / Technical Staff / Program in charge / Director CDE during office hours for any of their requirements. They can also interact through the CDE website also.

- **MONITORING MECHANISM**

ATTENDANCE FOR CONTACT CLASSES

Ideally every student is expected to attend all counseling sessions / classes and secure 100% attendance. However, the student must have a minimum of 50% attendance, to be eligible to appear for the end-semester examination in that semester, failing which, he / she is required to repeat the incomplete semester in the next semester.

Every course instructor is required to maintain an ‘ATTENDANCE AND ASSESSMENT RECORD’ which consists of attendance marked in each counseling session or practical or project work interaction. This should be submitted to the Coordinator of the Study Centre for checking the conduct of the interactive counseling sessions, syllabus coverage and the records of assessment marks and attendance.

Online portal for attendance entry is kept opened for the subsequent 3 days after the week-ends on which classes are conducted. The study centres will make online entry of the attendance provided by the course instructors. It is locked on the third working day and no study centre can enter attendance without the approval of the Director, CDE. After 50% classes are over, the attendance particulars of all

the students are published to enable them to know their status. At the end of the semester, prevention list for all centres are prepared at the office of the Director, CDE and sent to the Controller's office to arrive at preparing the eligible list of students for writing the examination. Hence CDE insists on monitoring the students attending the contact classes.

PROJECT WORK

Since project work is an integral component of the MBA program, and carries more credits, CDE adopts a two stage monitoring system. A project proposal validated by the guide has to be submitted online to the **Central Steering Committee**, for approval, as per the schedule in the project semester. The students can proceed with their project work only after their proposals are reviewed and approved by the **Central Steering Committee**, Centre for Distance Education.

In the next stage, there shall be two project reviews (each 100 marks) by the Project Monitoring Committee (PMC) at the study centers constituted by the Coordinators and approved by the Director (CDE), in the project semester. The student is required to make a presentation on the progress made before the PMC. The continuous assessment marks from both reviews shall be 40 marks which includes marks provided by the guides of the concerned project based on their interaction with them.

11. GRIEVANCE REDRESSAL MECHANISM

The Anna University has in place an grievance redressal mechanism for its members including the sexual harassment cell. Any member of the University can access the services through the University portal to avail the services and get their problems resolved.

The CDE will develop an internal cell comprising three members to address the needs / problems of the students. A link will be created in the CDE website for the students to access the services online.

ANNA UNIVERSITY, CHENNAI
MCA (DISTANCE MODE)
REGULATIONS – 2018
SYLLABUS I TO VI SEMESTERS
SEMESTER – I

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

C	M
4	100

COURSE OBJECTIVES

Introduce mathematical logic, combinatorial and counting techniques, Algebraic structures, Finite state system and grammar as Mathematical Foundation of computer Science so as to understand algorithms, computability and other theoretical aspects of Computer science.

COURSE OUTCOMES

Upon completion of the course, the students should be able to

- Understand mathematical logic and to develop analytical solutions for logical problems and they will be equipped with counting techniques to Solve combinatorial problems.
- Comprehend the algebraic structure and formal languages with their applications to handle abstract generalizations and computability.

UNIT I LOGIC - Statements - Connectives - Truth Tables - Normal Forms - Predicate Calculus – Inference -Theory for Statement Calculus.

UNIT II COMBINATORICS - Permutations and Combinations - Mathematical Induction - Pigeon-hole principle - Principle of Inclusion and Exclusion - Recurrence relations - Solution by generating functions and characteristics equations.

UNIT III ALGEBRAIC STRUCTURES - Groups - Cyclic group - Permutation group (S_n and D_n) - Substructures - Homomorphism -Cosets and Lagrange's Theorem - Normal Subgroups - Rings and Fields (definition and examples).

UNIT IV LATTICES - Partial order relation – Posets - Hasse diagram - Lattices – Special Lattices – Boolean algebra.

UNIT V FINITE STATE AUTOMATA AND GRAMMARS - Finite state automata - Deterministic and non-deterministic model - languages accepted by Finite State Automata - Regular expressions - Context-free grammars - Derivation trees.

REFERENCE BOOKS:

1. Trembley.J.P. and Manohar R., “Discrete Mathematical Structures with Applications to Computer Science”, Tata McGraw – Hill Publishing Company Limited, New Delhi. Reprinted in 2007.
2. Grimaldi R.P. and Ramana B.V., “Discrete and Combinatorial Mathematics”, Pearson Education, Reprinted in 2006. (5th Edition).
3. Hopcroft J.E. and Ullman J.D., “Introduction to Automata, Languages and Computation”, Narosa Publishing House, Reprint – 2002.

PROBLEM SOLVING AND PROGRAMMING

C	M
2	100

COURSE OBJECTIVES

- Understand the various problem solving techniques.
- To be aware of the top down design technique.
- To learn the syntax of C.
- To be exposed to the file processing techniques of C.
- To be familiarized with the preprocessor directives.

COURSE OUTCOMES

Upon completion of the course, the students should be able to

- Design and implement C programs for any given problem.
- Work with existing programs and modify it as per the requirements.
- Identify the errors in a C program.
- Identify the output of a C program without actually executing it.

UNIT I PROBLEM SOLVING - Introduction – The Problem–Solving Aspect – Top Down Design – Implementation of Algorithms – Program Verification – The Efficiency of Algorithms – The Analysis of Algorithms.

UNIT II BASICS OF C PROGRAMMING - Introduction to C Programming Environment – History of C – C Standard Library – Basics of C Program Development Environment - Introduction to C Programming - A simple C Program – Memory Concepts – Arithmetic – Decision Making – Relational Operators – Assignment – Increment and Decrement Operators- Structured Program Development – Algorithms – Pseudocode- Control Structures – if , if/else Selection Structure.

UNIT III REPETITION CONTROL STRUCTURES, FUNCTIONS AND ARRAYS - Essentials of Repetition – The while, do/while Repetition Structure - Counter-Controlled Repetition – for – Multiple Selection - Switch – Break – Continue – Logical Operators Functions- Definitions - Prototypes –Header Files – Storage Classes – Scope Rules Recursion- Comparing Iteration and Recursion. Arrays – Declara-tion – Usage – Passing Arrays to Functions.

UNIT IV POINTERS, STRINGS AND AGGREGATE DATA TYPES - Pointer Variable Declara-tions and Initialization – Operators – Uses--Pointer Expressions and Pointer Arithmetic – Relationship between Pointers and Arrays – Arrays of Pointers – Pointers to Functions. Fundamentals of Strings and Characters – Character Handling Library - String Handling Library. Structures- Definition – Initialization – Unions – Bitwise Operators – Enumeration Constants.

UNIT V STREAMS, FILES AND PREPROCESSOR - Streams – Formatting Output with printf -- Formatting Input with scanf. Files – Sequential-Access Files- Creation – Reading –Random-Access Files – Creation – Reading. C Preprocessor – Introduction- #include - #define – Symbolic Constants- Macros- Conditional Compilation - #error - #pragma – Operators # and ## - Line Numbers – Predefined Symbolic Constants.

REFERENCE BOOKS:

1. R.G.Dromey, “How to Solve it by Computer”, Pearson Education, 2007.
2. H. M. Deitel and P. J. Deitel, ”C How to Program”, 7th Edition, Pearson Education, 2018.
3. Pradip Dey, Manas Ghosh, “Programming in C”, Oxford University Press, 2007.
4. Cormen,Leiserson, Rivest, Stein, “ Introduction to Algorithms”, McGraw Hill Publishers, 2002.
5. Kernigan Brian W., and Dennis M. Ritchie, “ The C Programming Language”, Second Edition, Pren-tice Hall, 1988.

DATABASE MANAGEMENT SYSTEM

C	M
2	100

COURSE OBJECTIVES

- Learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram.
- To make a study of SQL and relational database design.
- Understand the internal storage structures using different file and indexing techniques which will help in physical DB design.
- Know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.
- Gain a fundamental knowledge about the Storage and Query processing Techniques.

COURSE OUTCOMES

Upon completion of the course, the students should be able to

- Design and create tables in database and query them.
- Know how transaction processing is done.
- Analyze and appraise different types of databases.

UNIT I RELATIONAL DATABASES - Purpose of Database System — Views of data – Data Models – Database System Architecture –Entity–Relationship model – E-R Diagrams -- Introduction to relational databases -The relational Model –Keys - Relational Algebra – Relational Calculus – SQL fundamentals - Advanced SQL features –Embedded SQL– Dynamic SQL.

UNIT II DATABASE DESIGN - Functional Dependencies – Non-loss Decomposition – Functional Dependencies – First, Second, Third Normal Forms, Dependency Preservation – Boyce/Codd Normal Form- Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form.

UNIT III TRANSACTIONS - Transaction Concepts - Transaction Recovery – ACID Properties – Sys-tem Recovery – Media Recovery – Two Phase Commit - Save Points – SQL Facilities for recovery – Con-currency – Need for Concurrency – Locking Protocols – Two Phase Locking – Deadlock- – Recovery Isolation Levels – SQL Facilities for Concurrency.

UNIT IV IMPLEMENTATION TECHNIQUES - Overview of Physical Storage Media – Magnetic Disks – RAID – Tertiary storage – File Organization – Organization of Records in Files – Indexing and Hashing –Ordered Indices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing – Query Processing Overview – Catalog Information for Cost Estimation.

UNIT V ADVANCED TOPICS - Distributed Databases-Architecture-Transaction Processing-Data Warehousing and Mining-Classification-Association rules-Clustering-Information Retrieval-Relevance ranking-Crawling and Indexing the Web- Object Oriented Databases-XML Databases.

REFERENCE BOOKS:

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, “Database System Concepts”, Sixth Edition, Tata McGraw Hill, 2011.
2. C.J.Date, A.Kannan, S.Swamynathan, “An Introduction to Database Systems”, Eighth Edition, Pear-son Education, 2006.
3. Ramez Elmasri, Shamkant B. Navathe, “Fundamentals of Database Systems”, Fifth Edition , Pear-son, 2008.
4. Raghu Ramakrishnan, “Database Management Systems”, Fourth Edition, Tata McGraw Hill, 2010.
5. G.K.Gupta, ”Database Management Systems”, Tata McGraw Hill, 2011.

SOFTWARE ENGINEERING

C	M
2	100

COURSE OBJECTIVES

- To provide information about wider engineering issues that form the background to develop complex, evolving (software-intensive) systems.
- To plan a software engineering process to account for quality issues and non-functional requirements.
- To employ a selection of concepts and techniques to complete a small-scale analysis and design in mini projects.
- To impart knowledge to translate requirement specifications into a design, and then realize that design practically, all using an appropriate software engineering methodology.
- To provide basic knowledge about software project management.

COURSE OUTCOMES

Upon completion of the course, the students should be able to

- Familiar with basic concepts of Software design and implementation.
- Perform software testing on various applications.
- Understand and apply various software metrics on software quality products.

UNIT I INTRODUCTION - Software Engineering – Product and process – process models - Waterfall Life cycle model – Spiral Model – Prototype Model – fourth Generation Techniques – Agile methods.

UNIT II REQUIREMENT ANALYSIS - Software Requirements Analysis and Specification – Software Requirements – Problem Analysis – Requirements Specification – Validation – Metrics – Summary.

UNIT III SOFTWARE DESIGN - Abstraction – Modularity – Software Architecture – Cohesion – Coupling – Various Design Concepts and notations – Real time and Distributed System Design – Documentation – Dataflow Oriented design – Designing for reuse – Programming standards.

UNIT IV SOFTWARE TESTING - Coding – Programming Practice – Top-down and Bottom-up - structured programming – Information Hiding – Programming style – Internal Documentation Verification – Code Reading – Static Analysis – Symbolic Execution – Code Inspection or Reviews – Unit Testing – Fundamentals – Functional Testing versus structural Testing Coding.

UNIT V SOFTWARE MAINTENANCE AND SOFTWARE METRICS - Need for Software maintenance – Maintenance models - SCM – Version Control – SCM process – Software Configuration Items – Taxonomy – Basics of Case tools - Scope of Software Metrics – Classification of metrics – Measuring Process and Product attributes – Direct and Indirect measures – Reliability – Software Quality Assurance – Standards.

REFERENCE BOOKS:

1. Pankaj Jalote, “An Integrated Approach to Software Engineering”, Third Edition, Narosa publications, 2011.
2. Ian Sommerville, “Software engineering”, Ninth Edition, Pearson Education Asia, 2010.
3. Roger S. Pressman, “Software Engineering – A Practitioner’s Approach”, Seventh Edition, Tata McGraw-Hill International Edition, 2009.

COMPUTER ORGANIZATION & DESIGN

C	M
2	100

COURSE OBJECTIVES

- Understand the fundamentals of Boolean logic and functions.
- To have a thorough understanding of the basic structure and operation of a digital computer.
- Design and realize digital systems with basic gates and other components using combinational and sequential circuits.
- To discuss in detail the operation of the arithmetic and logic unit.
- Study the instruction sets and operation of a processor.
- Study the different ways of communicating with I/O devices and standard I/O Interfaces.
- To study the hierarchical memory system including cache memories and virtual memory.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Master the binary and hexadecimal number systems including computer arithmetic.
- Design and implement digital systems with basic gates and other components using combinational and sequential circuits.
- Be familiar with the Von Neumann architecture.
- Be familiar with the functional units of the processor and addressing modes, instruction sets.
- Be familiar with the memories and cache subsystem.
- Be familiar with different ways of communicating with I/O devices and standard I/O interfaces.

UNIT I DIGITAL FUNDAMENTALS - Digital systems, binary numbers, octal, hexadecimal conversions, signed binary numbers, complements, logic gates, Boolean algebra, K-maps, standard forms, NAND-NOR implementation.

UNIT II COMBINATIONAL AND SEQUENTIAL CIRCUITS - Combinational circuits, adder, subtractor, ALU design, decoder, encoder, multiplexers, Sequential circuits: latches, flip-flops, registers, memories, up- down counters.

UNIT III PROCESSOR FUNDAMENTALS - Von-neumann architecture, processor: definition, structure, category, technology, ALU concept, stored programs, fetch execute cycle, instruction formats, clock rate instruction rate, pipeline, current processors, multi core processors.

UNIT IV MEMORY - Physical memory, addressing, virtual memory, address translation, paging, cache, L1,L2,L3 cache memories, cache mapping, LRU replacement.

UNIT V I/O DATA TRANSFER - Data transfer, Serial and Parallel data transfer, Full duplex- half duplex interaction, Bus interface, Programmed I/O, Polling, Interrupt driven I/O, Hardware interrupt mechanism, Interrupt vectors, Multi level of interrupts, DMA, buffer chaining, operation chaining.

REFERENCE BOOKS:

1. Morris mano, "Digital design" PHI/Pearson, fourth edition 2006.
2. "Essentials of Computer Architecture", Douglas E.Comer Pearson sixth edition 2012.
3. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, "Computer Organization", Tata McGraw Hill, Fifth Edition, 2002.
4. William Stallings, "Computer Organization and Architecture – Designing for Performance", Pearson Education, Seventh Edition, 2006.
5. David A Patterson and John L. Hennessy, "Computer Organization and Design, The Hardware/Soft-ware Interface", Morgan Kaufmann / Elsevier, Third Edition, 2005.

PROGRAMMING LAB

C	M
2	100

COURSE OBJECTIVES

- To practice the syntax of C.
- To be exposed to the file processing techniques of C.
- To be familiarized with control structures, functions, arrays and files.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Design and implement C programs for any given problem.
- Understand an existing program and modify it as per the requirements.
- Identify the errors in a C program.
- Produce the output of a C program by actually executing it.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Non-iterative control structures.
- Iterative control structures and arrays.
- Functions with parameters.
- Functions with arrays, structures as arguments.
- Character and String handling Libraries.
- Files – Sequential access and random access.
- Preprocessor directives for other features like macros, conditional compilation.

DATABASE MANAGEMENT SYSTEM LAB

C	M
2	100

COURSE OBJECTIVES

- Understand the concepts of DBMS practically.
- To familiarize with SQL queries.
- To write stored procedures in DBMS.
- Learn front end tools and to integrate them with databases.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Design and Implement databases practically.
- Formulate complex queries using SQL and execute them.
- Design and Implement applications that have GUI and access databases for backend connectivity.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Data Definition, Manipulation of Tables and Views
- Database Querying – Simple queries, Nested queries, Sub queries and Joins
- Triggers
- Transaction Control
- Embedded SQL
- Database Connectivity with Front End Tools
- Front End Tools / Programming Languages
- High level language extensions - PL/SQL Basics
- Procedures and Functions
- Database Design and Implementation (Case Study)

SEMESTER – II
COMPUTER NETWORKS

C	M
4	100

COURSE OBJECTIVES

- Understand data communication techniques.
- To know network Fundamentals.
- Understand Network layers and its functionalities.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Trace the flow of information from one node to another node in the network.
- Identify the component required to build different types of networks.
- Understand the division of network functionalities into layers.
- Identify solution for each functionality at each layer.
- Choose the required functionality at each layer for given application.

UNIT I INTRODUCTION - Communication model – Data communications and Networking – Data transmission concepts and terminology – Transmission media –Data Encoding Techniques – Digital Data communication Techniques- Data link Control Protocols.

UNIT II NETWORK FUNDAMENTALS - Protocol architecture – OSI – TCP/IP – LAN Architecture – Topologies – MAC – Ethernet, Fast Ethernet, Token ring, FDDI, Wireless LANS : 802.11/ Wi-Fi/ Bluetooth/WiMAX.

UNIT III NETWORK LAYER - Network layer functions – Switching concepts – Circuit switching networks – Packet Switching – Routing – Internetworking concepts – IP – Unreliable connectionless delivery – Datagrams – Routing IP datagrams – ICMP.

UNIT IV TRANSPORT LAYER - Transport layer functions – User Datagram Protocol – Transmission Control Protocol – Reliable Delivery Service – Connection Establishment – Flow Control – Congestion Control – Queuing disciplines – Congestion Avoidance.

UNIT V APPLICATIONS - Domain Name System(DNS) – Telnet – rlogin – FTP – SMTP – MIME – IMAP – HTTP – SNMP – Security.

REFERENCES

1. Larry L. Peterson & Bruce S. Davie, “Computer Networks - A systems Approach”, 5th Edition, Morgan Kaufmann, 2012.
2. James F. Kurose, Keith W. Ross, “Computer Networking: A Top-Down Approach”, Sixth Edition, Addison-Wesley, 2008.
3. William Stallings, “Data and Computer Communications”, Ninth Edition, PHI, 2004.
4. Andrew S.Tanenbaum, “Computer Networks”, Tata McGraw Hill, 3rd Edition, 2001.

OPERATING SYSTEM

C	M
2	100

COURSE OBJECTIVES

- Learn the Operating System basics.
- Study the process management of Operating system.
- Gain knowledge in the storage management and I/O systems of Operating system.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Ability to discuss on the basics of OS.
- In depth knowledge in process management, memory management and I/O Management of various operating systems.
- To explore the case studies with various operating systems.

UNIT I OPERATING SYSTEMS OVERVIEW - Operating system – Types of Computer Systems - Computer-system operation – I/O structure – Hardware Protection - System components – System calls – System programs – System structure - Process concept – Process scheduling – Operations on processes – Cooperating processes – Inter process communication – Communication in client-server systems - Multithreading models – Threading issues.

UNIT II PROCESS MANAGEMENT - Scheduling criteria – Scheduling algorithms – Multiple-processor scheduling – Real time scheduling – Algorithm Evaluation – Process Scheduling Models - The critical-section problem – Synchronization hardware – Semaphores – Classic problems of synchroniza-tion – critical regions – Monitors - System model – Deadlock characterization – Methods for handling deadlocks – Recovery from deadlock.

UNIT III STORAGE MANAGEMENT - Memory Management – Swapping – Contiguous memory allocation – Paging – Segmentation – Segmentation with paging. Virtual Memory: Background – Demand paging – Process creation – Page replacement – Allocation of frames – Thrashing.

UNIT IV I/O SYSTEMS - File concept – Access methods – Directory structure – File-system mounting – Protection - Directory implementation – Allocation methods – Free-space management - Disk scheduling – Disk management – Swap-space management.

UNIT V CASE STUDY - The Linux System - History – Design Principles – Kernel Modules – Process Management – Scheduling – Memory management – File systems – Input and Output – Inter-process Communication – Network Structure – Security – Windows 7 - History – Design Principles – System Components – Environmental subsystems – File system – Networking.

REFERENCE BOOKS:

1. Abraham Silberschatz, Peter B. Galvin and Greg Gagne, “Operating System Concepts”, Ninth Edition, John Wiley and Sons Inc 2012.
2. Andrew S. Tanenbaum, “Modern Operating Systems”, Second Edition, Addison Wesley, 2001.
3. Gary Nutt, “Operating Systems”, Second Edition, Addison Wesley, 2001.
4. H M Deital, P J Deital and D R Choffnes, “Operating Systems”, Pearson Education, 2004.

DATA STRUCTURES AND ALGORITHMS

C	M
2	100

COURSE OBJECTIVES

- Gain comprehensive introduction of common data structures, and algorithm design and analysis.
- To master the design of tree, sets and graph structures and its applications.
- Learn about sorting techniques and understand how common computational problems can be solved efficiently on a computer.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Describe, explain, and use abstract data types including stacks, queues and lists.
- Design and Implement Tree data structures and Sets.
- Design algorithms using graph structure to solve real-life problems.
- Implement a variety of algorithms for sorting, including insertion sort, selection sort, merge sort, quick sort, and heap sort.
- Describe the asymptotic performance and algorithm design techniques studied in this course and understand the practical implications of that information.

UNIT I BASIC DATA STRUCTURES - From Problems to programs - Abstract Data Types - Data Types, Data Structures, and Abstract Data Types - The Running Time of a program - Calculating the Run-ning Time of a program - Good Programming Practice; Basic Data Types: The Data Type “List” - Imple-mentation of Lists – Stacks – Queues – Mappings - Stacks and Recursive Procedures.

UNIT II TREES & SETS - Trees: Basic Terminology - The ADT Tree - Implementation of Trees - Binary Trees; Basic operations on sets: Introduction to Sets - An ADT with Union, Intersection, and Difference - A Bit-Vector Implementation of Sets; Advanced Set Representation Methods: Binary Search Trees - Time Analysis of Binary Search Tree operations – Tries - Balanced Tree Implementations.

UNIT III GRAPHS - Directed Graphs: Basic Definitions - Representations of Directed Graphs - The Single-Source Shortest Paths Problem - The All-Pairs Shortest Path Problem - Traversals of Directed Graphs - Directed Acyclic Graphs - Strong Components; Undirected Graphs: Definitions - Minimum-Cost Spanning Trees – Traversals - Articulation Points and Biconnected Components - Graph Matching.

UNIT IV SORTING & ALGORITHM ANALYSIS - Sorting: The Internal Sorting Model - Some Simple Sorting Schemes - Quick Sort - Heap Sort - Bin Sorting - A Lower Bound for Sorting by Comparisons - Order Statistics; Algorithm Analysis Techniques: Efficiency of Algorithms - Analysis of Recursive programs - Solving Recurrence Equations - A General Solution for a Large Class of recur-rences.

UNIT V ALGORITHM DESIGN TECHNIQUES - Algorithm Design Techniques: Divide-and-Conquer Algorithms - Dynamic Programming - Greedy Algorithms – Backtracking - Local Search Algo-rithms.

REFERENCE BOOKS:

1. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, “Data Structures and Algorithms”, Pearson Education, Reprint 2006.
2. Robert Sedgewick and Kevin Wayne, “Algorithms”, Fourth Edition, Pearson Education, 2011.
3. Thomas H. Cormen, Charles E. Leiserson, Ronasld L. Rivest, Clifford Stein, “Introduction to Algo-rithms”, Third Edition, PHI Learning pvt.Limited,2012.
4. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, 2nd edition, Pearson Educa-tion, 2005.

COMPUTER GRAPHICS AND MULTIMEDIA A SYSTEMS

C	M
2	100

COURSE OBJECTIVES

- Understand the basic concepts of graphics designs.
- To familiarize the student with the transformation and projection techniques.
- Expose the student to various color models.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to

- Implement basic graphics transformation and projection techniques.
- Design an application that incorporates different concepts of various color models.
- Apply and explore new techniques in the areas of compression techniques.
- Appreciate the use of multimedia authoring tools and multimedia compression techniques.

UNIT I INTRODUCTION - Overview of Graphics System - Bresenham technique – Line Drawing and Circle Drawing Algorithms - DDA - Line Clipping - Text Clipping.

UNIT II 2D TRANSFORMATIONS - Two dimensional transformations – Scaling and Rotations - Interactive Input methods - Polygons - Splines – Bezier Curves - Window view port mapping transformation.

UNIT III 3D TRANSFORMATIONS -3D Concepts - Projections – Parallel Projection - Perspective Projection – Visible Surface Detection Methods - Visualization and polygon rendering – Color models – XYZ-RGB-YIQ-CMY-HSV Models - animation – Key Frame systems - General animation functions - morphing.

UNIT IV OVERVIEW OF MULTIMEDIA -Multimedia hardware & software - Components of mul-timedia – Text, Image – Graphics – Audio – Video – Animation – Authoring.

UNIT V MULTIMEDIA SYSTEMS AND APPLICATIONS - Multimedia communication systems – Data base systems – Synchronization Issues – Presentation requirements – Applications – Video conferencing – Virtual reality – Interactive video – video on demand.

REFERENCE BOOKS:

1. Hearn D and Baker M.P, “Computer graphics – C Version”, 2nd Edition, Pearson Education, 2004.
2. Ralf Steinmetz, Klara Steinmetz, “Multimedia Computing, Communications and Applications”, Pearson Education, 2004.
3. Simon J. Gibbs and Dionysios C. Tsichritzis, “Multimedia Programming”, Addison Wesley, 1995.
4. John Villamil, Casanova and Leony Fernandez, Eliar, “Multimedia Graphics”, PHI, 1998.

OBJECT ORIENTED PROGRAMMING

C	M
2	100

COURSE OBJECTIVES

- Understand the OO paradigm.
- To be aware of the OO design technique.
- To learn the syntax of C++.
- To be exposed to the file processing and exception handling techniques of C++.
- To be familiarized with the Standard Template Library.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Design and implement C++ programs for any given problem.
- Understand an existing program and modify it as per the requirements.
- Identify the errors in a C++ program.
- Identify the output of a C++ program without actually executing it.
- Write generic programs using STL.

UNIT I FUNDAMENTALS - Object–Oriented Programming concepts – Encapsulation – Programming Elements – Program Structure – Enumeration Types — Functions and Pointers – Function Invoca-tion – Overloading Functions – Scope and Storage Class – Pointer Types – Arrays and Pointers – Call– by–Reference – Assertions – Standard template library.

UNIT II IMPLEMENTING ADTS AND ENCAPSULATION - Aggregate Type struct – Structure Pointer Operators – Unions – Bit Fields – Data Handling and Member Functions – Classes – Constructors and Destructors – Static Member – this Pointer – reference semantics – implementation of simple ADTs.

UNIT III POLYMORPHISM - ADT Conversions – Overloading – Overloading Operators – Unary Operator Overloading – Binary Operator Overloading – Function Selection – Pointer Operators – Visita-tion – Iterators – containers – List – List Iterators.

UNIT IV TEMPLATES - Template Class – Function Templates – Class Templates – Parameterizing – STL – Algorithms – Function Adaptors.

UNIT V INHERITANCE - Derived Class – Typing Conversions and Visibility – Code Reuse – Virtual Functions – Templates and Inheritance – Run–Time Type Identifications – Exceptions – Handlers – Standard Exceptions.

REFERENCE BOOKS:

1. Ira Pohl, “Object–Oriented Programming Using C++”, Pearson Education, Second Edition, 2003.
2. Stanley B.Lippman, Josee Lajoie, “C++ Primer”, Pearson Education, Third Edition, 2004.
3. Kamthane, “Object Oriented Programming with ANSI and Turbo C++”, Person Education, Third Edition, 2005.
4. Bhave , “ Object Oriented Programming With C++”, Pearson Education , 2004.

DATA STRUCTURES USING C++ LAB

C	M
2	100

COURSE OBJECTIVES

- Develop skills in design and implementation of data structures and their applications.
- Learn and implement linear, non linear and tree data structures using C++.
- Learn Set ADT and Graph data structures and its applications using C++.
- Study, implement and analyze of different sorting techniques using C++.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Work with basic data structures that are suitable for problems to be solved efficiently.
- Implementation of linear, tree, and graph structures and its applications.
- Implementation of various sorting techniques its algorithm design and analysis.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Abstract Data type Implementation of List, Stack and Queues.
- Tree ADT
- Tries Implementation
- Set ADT- Bit Vector Implementation
- Graph Representations
- Graph Traversals
- Shortest Path Implementation
- Spanning Tree Implementation
- Sorting Algorithms
- Implementation of Algorithms using Dynamic Programming, Backtracking

OPERATING SYSTEM LAB

C	M
2	100

COURSE OBJECTIVES

- To learn and understand the CPU scheduling algorithms.
- To learn and understand the implementation of memory management algorithm.
- To know the file management techniques practically.

COURSE OUTCOMES

- To implement the CPU scheduling methods.
- To implement the inter process communication techniques.
- To implement the page replacement algorithm.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Implement the following CPU Scheduling Algorithms.
i) FCFS ii) Round Robin iii) Shortest Job First.
- Implement the Mutual Exclusion Problem Using Dekker's Algorithm.
- Implement Inter Process Communication Problem (Producer-Consumer/ Reader- Writer Problem) Using Semaphores.
- Implement Best fit, First Fit Algorithm for Memory Management.
- Implement Memory Allocation with Pages.
- Implement FIFO page Replacement Algorithm.
- Implement LRU page Replacement Algorithm.
- Implement the creation of Shared memory Segment.
- Implement File Locking.
- Implement Banker's algorithm.

SEMESTER - III**SECURITY PRACTICE**

C	M
2	100

COURSE OBJECTIVES

- Understand the concepts and models of security in computing.
- Understand the cryptographic techniques used.
- Explain the security standards followed at the network level and at the application level.
- Estimate the level of security risk faced by an organization and the counter measures to handle the risk.
- Learn secured software development.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Compare various Cryptographic Techniques.
- Design secure applications.
- Inject secure coding in the developed applications.

UNIT I SECURITY – OVERVIEW - The Threat Environment – attackers and attacks – Security Planning and Policy – risk analysis – governance frameworks.

UNIT II CRYPTOGRAPHY- Elements of cryptography – ciphers – encryption systems – symmetric / asymmetric - DES, AES, RSA – key management – authentication – cryptographic systems - standards – secure networks VPNs, SSL/TLS, IPSec, LAN security.

UNIT III ACCESS CONTROL - Physical access control – access cards – authentication mechanisms – directory servers – Firewalls – packet filtering – stateful packet inspection – NAT – IDS – Firewall architectures.

UNIT IV HOST AND DATA SECURITY- Host Hardening – OS hardening – managing vulnerabilities, permissions - data protection – Application security – issues – e-commerce security – e-mail security - Incident and Disaster Response.

UNIT V SECURE CODING - OWASP/SANS Top Vulnerabilities - Buffer Overflows - Incomplete mediation - XSS - Anti Cross Site Scripting Libraries anonical Data Format - Command Injection - Re-direction - Inference – Application Controls - - C Secured Software Development Life Cycle - Testing, Maintenance and Operation - Evaluation of Security Systems.

REFERENCE BOOKS:

1. Raymond R. Panko, “Corporate computer and network security”, Second edition, Pearson, 2012.
2. Wade Trappe, Lawrence C Washington, “Introduction to Cryptography with Coding and Theory”, Second Edition, Pearson, 2007.
3. Matt Bishop, “Computer Security: Art and Science”, Pearson, 2003.
4. Charles Pfleeger, Shari Lawrence Pfleeger, Devin N Paul, “Security in Coding”, Pearson, 2007.
5. Wenbo Mao, “Modern Cryptography Theory and Practice”, Pearson, 2004.

DATA WAREHOUSING AND MINING

C	M
2	100

COURSE OBJECTIVES

- Understand Data mining principles and techniques and Introduce DM as a cutting edge business intelligence.
- Expose the students to the concepts of Datawarehousing Architecture and Implementation.
- Study the overview of developing areas – Web mining, Text mining and ethical aspects of Data min-ing.
- Identify Business applications and Trends of Data mining.

COURSE OUTCOMES

Upon Completion of the course, the students will be able to

- Evolve Multidimensional Intelligent model from typical system.
- Discover the knowledge imbibed in the high dimensional system.
- Evaluate various mining techniques on complex data objects.

UNIT I DATA WAREHOUSE - Data Warehousing - Operational Database Systems vs Data Warehouses - Multidimensional Data Model - Schemas for Multidimensional Databases – OLAP operations – Data Warehouse Architecture – Indexing – OLAP queries & Tools.

UNIT II DATA MINING & DATA PREPROCESSING - Introduction to KDD process – Knowledge Discovery from Databases - Need for Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation.

UNIT III ASSOCIATION RULE MINING - Introduction - Data Mining Functionalities - Association Rule Mining - Mining Frequent Itemsets with and without Candidate Generation - Mining Various Kinds of Association Rules - Constraint-Based Association Mining.

UNIT IV CLASSIFICATION & PREDICTION - Classification vs Prediction – Data preparation for Classification and Prediction – Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Section.

UNIT V CLUSTERING - Cluster Analysis: - Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods – Clustering High- Dimensional Data – Constraint-Based Cluster Analysis – Outlier Analysis.

REFERENCE BOOKS:

1. Jiawei Han and Micheline Kamber “Data Mining Concepts and Techniques” Second Edition, Elsevier, Reprinted 2011.
2. K.P. Soman, Shyam Diwakar and V. Ajay “Insight into Data mining Theory and Practice”, Easter Economy Edition, Prentice Hall of India, 2006.
3. G. K. Gupta “Introduction to Data Mining with Case Studies”, Easter Economy Edition, Prentice Hall of India, 2006.
4. Pang-Ning Tan, Michael Steinbach and Vipin Kumar “Introduction to Data Mining”, Pearson Education, 2007.

OBJECT ORIENTED ANALYSIS AND DESIGN

C	M
4	100

COURSE OBJECTIVES

- Understand the basics of object oriented analysis and design.
- Learn UML models and tools.
- To apply design patterns to various applications.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Familiarize with the topics of object oriented System designs.
- Design patterns using UML.
- Apply design patterns to various applications.

UNIT I INTRODUCTION - An overview – Object basics – Object state and properties – Behavior – Methods – Messages – Information hiding – Class hierarchy – Relationships – Associations – Aggregations- Identity – Dynamic binding – Persistence – Metaclasses – Object oriented system development life cycle.

UNIT II METHODOLOGY AND UML - Introduction – Survey – Rumbugh, Booch, Jacobson meth-ods – Patterns – Frameworks – Unified approach – Unified modeling language – Static and Dynamic models – UML diagrams – Class diagram – Usecase diagrams – Dynamic modeling – Model organiza-tion – Extensibility.

UNIT III OBJECT ORIENTED ANALYSIS - Identifying Usecase – Business object analysis – Use-case driven object oriented analysis – Usecase model – Documentation – Classification – Identifying object, relationships, attributes, methods – Super-sub class – A part of relationships Identifying attributes and methods – Object responsibility.

UNIT IV OBJECT ORIENTED DESIGN - Design process – Axions – Colollaries – Designing class-es – Class visibility – Refining attributes – Methods and protocols – Object storage and object interoper-ability – Databases – Object relational systems – Designing interface objects – Macro and Micro level processes – The purpose of a view layer interface.

UNIT V SOFTWARE QUALITY - Quality assurance – Testing strategies – Object orientation testing – Test cases – Test Plan – Debugging principles – Usability – Satisfaction – Usability testing – Satisfaction testing.

REFERENCE BOOKS:

1. Ali Bahrami, “Object Oriented System Development”, McGraw Hill International Edition, Second reprint 2008.
2. Craig Larman, “Applying UML and Patterns”, 2nd Edition, Pearson, 2002.
3. Grady Booch, James Rumbaugh, Ivar Jacobson, “The Unified Modeling Language
4. User Guide”, Addison Wesley Long man, 1999.
5. Bernd Bruegge, Allen H. Dutoit, “Object Oriented Software Engineering using UML, Patterns and Java”, Pearson 2004.

WEB PROGRAMMING

C	M
2	100

COURSE OBJECTIVES

- Understand the basics of HTML.
- Learn the concepts of XML related technologies.
- Learn the fundamentals of java.
- Understand the importance of server side programming and web development.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Design and implementation of web forms and client side validation.
- XML authoring, Parsing, and related technologies.
- Object oriented concept programming using Java.
- Design and development of GUI based applications using Swing components.
- Design and development of servlet and JSP application with database connectivity.

UNIT I HTML AND JAVA SCRIPT - World Wide Web – XHTML - Cascading Style Sheet - JavaS-crypt – java script objects - Date – Array – pattern matching using regular expressions – Dynamic documents with java script – HTML 5 – new features

UNIT II XML TECHNOLOGIES - XML – validating XML - DTD – XML schema – XPath – XLink – parsing XML using DOM – parsing XML using SAX – transforming XML with XSL – Integrating XML with database – AJAX – RSS – JSON

UNIT III JAVA BASICS - Overview of Java – Java Fundamentals – Classes, Objects and Methods – Arrays and Array Lists – String – String Builder – Regular expressions – class pattern – class matcher - Packages and Interfaces – Exception Handling.

UNIT IV JAVA GUI AND DATABASE CONNECTIVITY - Generic classes – Generic methods – Applets – Applet life cycle methods – Applets based GUI – GUI components – Basic of Swings – Accessing database with JDBC - basics

UNIT V SERVER SIDE SCRIPT - Overview of servlets – Servlet API – servlet life cycle – servlet configuration – running servlet with database connectivity - servlet support for cookies – Session tracking – Java server pages – JSP Case study/ Applications – Developing Dynamic, Data driven web sites.

REFERENCE BOOKS:

1. Robert W. Sebesta, “Programming with World Wide Web”, Pearson Education, 2008.
2. Paul Deitel and Harvey Daitel, “Java – How to program”, Ninth Edition, PHI, 2012.
3. Kogent Solutions, “Java 6 Programming Black book”, Dreamtech Press, 2007.

WEB PROGRAMMING LAB

C	M
2	100

COURSE OBJECTIVES

- To learn web page creation.
- To understand the real time requirements of web page such as validation, use of DOM, role of XML.
- To understand OOP concepts and basics of Java language.
- To learn and use client server architecture based applications.
- To explore server side functionalities of an application.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Make Web site creation and validation.
- Work with XML based technologies.
- Develop simple console application using Java.
- Develop GUI application using Swing and Applet.
- Build web based applications using JDBC, Servlet / JSP.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Creation of web pages having dynamic contents and validation using java script.
- Creation of XML file and validation using XML schema and generation of XML using tools.
- Simple xml based applications using DOM, SAX and XSL.
- Basic Java programming covering objects, inheritance, polymorphism, interfaces, packages and exception handling.
- String handling programs and regular expression programs.
- Creation of applet based GUI's.
- Application involving applet based GUI, JDBC, Servlet, JSP, cookies and session tracking.

SECURITY LAB

C	M
2	100

COURSE OBJECTIVES

- Understand the application number theory in security.
- Study the symmetric key and public key algorithms.
- Understand the compression techniques for security.

COURSE OUTCOMES

- Able to implement program using modules arithmetic for security.
- To implement symmetric key and public key algorithm.
- Ability to implement algorithms for digital signature and hashing.

EXPERIMENTS IN THE FOLLOWING TOPICS:

1. Write programs to implement the following number theory
concept Prime and Relatively Prime Numbers
Arithmetic Modulo 8 and Multiplication Modulo 8
Fermat's Theorem and Euler's Totient Function
2. Write programs to implement the following cryptography
algorithms Playfair cipher and Hill cipher
Simplified DES algorithm
RSA algorithm
3. Write programs to implement the following hash a
MD5
SHA-1
4. Write programs to implement the following Authentication
Digital Signature and Digital Certificate
Kerberos
System X.509
5. Write a program to implement Hacking windows.
BIOS Passwords.
Windows login password
Internet explorer users
Changing windows visuals
Accessing restricted drives.

SEMESTER - IV**UNIX AND NETWORK PROGRAMMING**

C	M
4	100

COURSE OBJECTIVES

- To understand the design of the Unix operating system using system calls.
- Familiarize with the various inter process communication.
- To learn the various low-level algorithms for socket programming used in UNIX.

COURSE OUTCOMES

- Ability to develop the application using system calls.
- Able to write programs for UNIX networking.
- Able to write programs for communication applications.

UNIT I INTRODUCTION & FILE SYSTEM - Overview of UNIX OS - File I/O – File Descriptors – File sharing - Files and directories – File types - File access permissions – File systems – Symbolic links - Standard I/O library – Streams and file objects – Buffering - System data files and information - Password file – Group file – Login accounting – system identification.

UNIT II PROCESSES - Environment of a UNIX process – Process termination – command line arguments - Process control – Process identifiers - Process relationships terminal logins – Signals -threads.

UNIT III INTERPROCESS COMMUNICATION - Introduction - Message passing (SVR4)- pipes – FIFO – message queues - Synchronization (SVR4) – Mutexes – condition variables – read – write locks – file locking – record locking – semaphores –Shared memory(SVR4).

UNIT IV SOCKETS - Introduction – transport layer – socket introduction - TCP sockets – UDP sockets - raw sockets – Socket options - I/O multiplexing - Name and address conversions.

UNIT V APPLICATIONS - Debugging techniques - TCP echo client server - UDP echo client server - Ping - Trace route - Client server applications like file transfer and chat.

REFERENCE BOOKS:

1. Richard Stevens, Stephen A.Rago “Advanced programming in the UNIX environment”, Pearson education, 2nd Edition 2005.
2. W.Stevens, Bill Fenner, Andrew Rudoff, “Unix Network Programming”, Volume 1, The Sockets Networking API,3rd Edition, Pearson education, Nov 2003.
3. Meeta Gandhi,Tilak Shetty and Rajiv Shah “The ‘C’ Odyssey Unix –The open Boundless C”, 1st Edition ,BPB Publications1992.

ENTERPRISE APPLICATION DEVELOPMENT

C	M
2	100

COURSE OBJECTIVES

- To understand the J2EE, J2SE and J2ME concepts.
- Familiarize with java networking and RMI.
- To learn about CORBA and web services.

COURSE OUTCOMES

- To develop the application with JAVA networking and RMI features.
- To implement the database connectivity.
- Creation of web services.

UNIT I BASIC CONCEPTS - Distributed and Enterprise Systems- Variants on Java platform (J2EE, J2SE, J2ME)-Enterprise Systems Architecture-J2EE model architectures

UNIT II JAVA NETWORKING AND RMI - Input / output Streams – Java Networking – UDP and TCP Sockets - Java Remote Method Invocation – STUB and Skeleton

UNIT III CORBA AND JDBC - Introduction to CORBA – CORBA Environment – Database Connectivity – JDBC – JDBC with Servlets and JSP.

UNIT IV ENTERPRISE JAVA BEANS - Entity Beans-Session Beans-Message Driven Beans – Applications.

UNIT V SOA AND WEB SERVICES - SOA Fundamentals – XML – Comparison XML and HTML - Web Services – SOAP Protocols – UDDI.

REFERENCE BOOKS:

1. Herbert Schildt, "Java The Complete Reference", Eighth Edition, McGraw Hill Professional, 2011.
2. Jayson Falkner and Kevin Jones , "Servlets and JavaServer Pages: The J2EE Technology Web Tier", Addison-Wesley, 2006.

.NET PROGRAMMING

C	M
2	100

COURSE OBJECTIVES

- To understand the control structures in C#.
- To become familiar with event handling.
- To study the .NET features.

COURSE OUTCOMES

- Able to write the programs in C#.
- Write programs for database access.
- Develop web applications using .NET.

UNIT I BASICS OF C# - C# and the .NET framework – C# basics – Objects and types – Inheritance – Arrays – Operators and casts – Indexers.

UNIT II DELEGATES, COLLECTIONS & EXCEPTIONS - Delegates and events – Strings and regular expressions – Generics – Collections – Memory management and pointers – Errors and exceptions.

UNIT III MULTITHREADING & NETWORKING - Tracing and events - threading and synchronization - .Net security – localization – Manipulating XML - Managing the file system – basic network programming.

UNIT IV APPLICATION DEVELOPMENT - Window based applications – Data access with .NET – basics of ASP .NET - Introduction to web services.

UNIT V .NET ASSEMBLIES - Architecture – Assemblies – shared assemblies – CLR hosting – Appdomains – Reflection.

REFERENCE BOOKS:

1. Christian Nagel et al. "Professional C# 2005 with .NET 3.0", Wiley India, 2007.
2. Jesse Liberty, "Programming C#", O'Reilly, 2001.
3. Andrew Troelson, "Pro C# with .NET 3.0", Apress, 2007.
4. Kevin Hoffman, "Visual C# 2005", Pearson Education, 2006.
5. S. Thamarai Selvi, R. Murugesan, "A Text Book on C#", Pearson Education, 2003.

ENTERPRISE APPLICATION DEVELOPMENT LAB

C	M
2	100

COURSE OBJECTIVES

- To learn about HTML and CSS programming.
- To understand XML schema and programs for client side validation using Javascript.
- Familiarize with server side programs.

COURSE OUTCOMES

- Ability to develop client/server application.
- Create web services using HTML and XML programming.
- Ability to write programs for database connectivity.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Web programming with HTML tags, CSS for styling, Page layout
- Develop web pages using JavaScript for client side programming and HTML forms
- Using The DOM and the JavaScript object models
- Website optimization crunching HTML, using CSS to replace HTML and light-weight graphics to speed up websites
- Creating XML file with XML DTD and XML schema, SAX, XSL
- Constructing dynamic server-side web pages using JSF and integrate the Web application with many of the other Java2 Enterprise Edition application server methodologies such as Enterprise Java Beans, JavaMail, and SOAP.
- Developing Java Enterprise Applications Using EJB3 Session beans, entity beans and message-driven beans.
- Working with JNDI, JDBC, JMS.
- Application development using J2ME.

.NET PROGRAMMING LAB

C	M
2	100

COURSE OBJECTIVES

- Understand the control structures in C#.
- To become familiar with event handling and XML scripts.
- Learn database connectivity and web services in .NET.

COURSE OUTCOMES

- Ability to write programs for client/server application
- Develop the web applications using .NET.
- Ability to create web services using .NET.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Control Structures in C#.
- Arrays and pointers.
- XML Scripts.
- Asp/ VB .NET programs for client/server applications.
- Database Connectivity.
- Web services application.

SEMESTER - V**WEB SERVICES**

C	M
2	100

COURSE OBJECTIVES

- Learn the basics of XML technology.
- Understand the background of distributed information system.
- Learn the security features of web services and service composition.

COURSE OUTCOMES

The student should be able to

- Create, validate, parse, and transform XML documents.
- Design a middleware solution based application.
- Develop web services using different technologies.
- Compose set of complex web services.

UNIT I DISTRIBUTED INFORMATION SYSTEM - Distributed information system – Design of IB – Architecture of IB – Communication in an IS – Middleware RPC – TP monitors – Object brokers – Message oriented middleware – EAI – EAI Middleware – Workflow –Management – benefits and limitations – Web technologies for Application Integration.

UNIT II WEB SERVICES BUILDING BLOCK - Web Services – Definition – Web Services and EAI – Web Services Technologies – XML basics - web services Architecture – SOAP – WSDL – UDDI –WS – Addressing – WS – Routing – Web service implementation – Java based web services - .NET based web services.

UNIT III WEB SERVICE SECURITY - XML signature – XML Encryption – SAML - XKMS – WS-Security –WS Policy –Web service security framework – .NET and passport – UDDI and security - web service security in java – mobile web service security.

UNIT IV SEMANTIC WEB SERVICES - Semantic web service – architecture – RDF Data model – RDF schema – OWL – ontology – role of ontology in web services - semantic Web service implementation issues.

UNIT V SERVICE COMPOSITION - Service Coordination and Composition coordination protocols – WS – Coordination – WS – transaction – WSCI – Service Composition – Service Composition Models – Dependencies between coordination and composition – BPEL – Current trends.

REFERENCES

1. Gystavo Alonso, Fabio casasi, Hareemi kuno, vijay machiraju, “web Services – concepts, Architec-ture and Applications”, Springer, 2004.
2. Ron Schmelzer etal “ XML and Web Services”, Pearson Education, 2002.
3. Sandeep chatterjee and james webber,” Developing Enterprise web services: An Architect’s and Guide”, Practice Hall, 2004.
4. Freunk p.coyle,” XML, web Services and the Data Revolution”, Pearson, 2002.

SOFTWARE PROJECT MANAGEMENT

C	M
4	100

COURSE OBJECTIVES

- Understand the cost evaluation techniques.
- Learn the concepts of project planning and monitoring.
- Understand the concepts of organizing teams for software projects.

COURSE OUTCOMES

- To perform planning and scheduling activities.
- Ability to draw activity network.
- Ability to manage people and project.

UNIT I INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT - Project Definition – Contract Management – Activities Covered By Software Project Management – Overview of Project Planning – Stepwise Project Planning.

UNIT II PROJECT EVALUATION - Strategic Assessment – Technical Assessment – Cost Benefit Analysis – Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

UNIT III ACTIVITY PLANNING - Objectives – Project Schedule – Sequencing And Scheduling Activities – Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity On Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning And Control.

UNIT IV MONITORING AND CONTROL - Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Prioritizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

UNIT V MANAGING PEOPLE AND ORGANIZING TEAMS - Introduction – Understanding Behavior – Organizational Behaviour: A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Oldham – Hackman Job Characteristics Model – Working In Groups – Becoming A Team – Decision Making – Leadership – Organizational Structures – Stress – Health And Safety – Case Studies.

REFERENCE BOOKS:

1. Bob Hughes and MikeCotterell “Software Project Management”, Fifth Edition, TATA McGraw Hill Edition 2010.
2. Ramesh, Gopaldaswamy: “Managing Global Projects “, Tata McGraw Hill, 2001.
3. Royce,” Software Project Theory”, Pearson Education, 1999.
4. P.Jalote, “Software Project Management In Practice”, Pearson Education, 2000.

MOBILE APPLICATION DEVELOPMENT

C	M
2	100

COURSE OBJECTIVES

- To learn the characteristics of mobile applications.
- Understand the intricacies of UI required by mobile applications.
- To study about the design aspects of mobile application.
- To learn development and programming of mobile applications.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- To design and implement the user interfaces of mobile applications.
- To design the mobile applications that is aware of the resource constraints of the mobile devices.
- To develop advanced mobile applications that accesses the databases and the web.
- To develop useful mobile applications in the current scenario using Google Android and Eclipse simulator.

UNIT I INTRODUCTION - Mobile Applications – Characteristics and Benefits – Application Model – Infrastructure and Managing Resources – Mobile Software Engineering – Frameworks and Tools – Mobile devices Profiles.

UNIT II USER INTERFACE - Generic UI Development – VUIs and Mobile Applications – Text to Speech techniques – Designing the right UI – Multimodal and Multichannel UI – Gesture based UIs – Screen Elements and Layouts – Voice XML – Java API.

UNIT III APPLICATION DESIGN - Memory Management – Design patterns for limited memory – Work flow for Application Development – Techniques for composing Applications – Dynamic Linking – Plug ins and rules of thumb for using DLLs – Concurrency and Resource Management – Look and feel.

UNIT IV APPLICATION DEVELOPMENT - Intents and Services – Storing and Retrieving data – Communication via the Web – Notification and Alarms – Graphics and Multimedia – Telephony – Location based services – Packaging and Deployment – Security and Hacking.

UNIT V TOOLS - Google Android Platform – Eclipse Simulator – Android Application Architecture – Event based programming – Apple iPhone Platform – UI tool kit interfaces – Event handling and Graphics services – Layer Animation.

REFERENCE BOOKS:

1. Zigurd Mednieks, Laird Dornin, G,Blake Meike and Masumi Nakamura “Programming Android”, O’Reilly, 2011.
2. Reto Meier, “Professional Android 2 Application Development”, Wrox Wiley, 2010.
3. Alasdair Allan, “iPhone Programming”, O’Reilly, 2010.
4. Wei-Meng Lee, “Beginning iPhone SDK Programming with Objective-C”, Wrox Wiley, 2010.
5. Poslad, “Ubiquitous Computing: Smart Devices, Environments and Interactions”, Wiley, 2009.

COMMUNICATION SKILLS

C	M
2	100

COURSE OBJECTIVE

To understand how communication works, and to manage the assumptions more effectively Helps students communicate effectively, appropriately and clearly in all situations.

COURSE OUTCOME

Students will be able to identify barriers to effective communication and how to overcome them.

UNIT I COMMUNICATION IN BUSINESS - Systems approach- forms - functions and principles of communication - management and communication- communication patterns - barriers to communication - interpersonal perception – SWOT analysis -Johari Window -Transactional Analysis.

UNIT II NON-VERBAL AND INTERCULTURAL COMMUNICATION - Importance of non-verbal communication - personal appearance - facial expressions- movement- posture – gestures - eye contact –voice - beliefs and customs- worldview and attitude.

UNIT III ORAL COMMUNICATION - Listening - types and barriers to listening - speaking - planning and audience awareness - persuasion- goals - motivation and hierarchy of needs - attending and conducting interviews-participating in discussions, debates - and conferences - presentation skills-para-linguistic features -fluency development strategies.

UNIT IV BUSINESS CORRESPONDENCE - Business letter - principles of business writing- memos -e-mails – agendas- minutes- sales letter- enquiries- orders- letters of complaint- claims and adjustments- notice and tenders- circulars- letters of application and resume.

UNIT V BUSINESS PROPOSALS AND REPORTS - Project proposals- characteristics and structure- Project reports – types- characteristics,-structure-Appraisal reports – performance appraisal, product appraisal- Process and mechanics of report writing- visual aids- abstract - executive summary- recommendation writing- definition of terms.

REFERENCE BOOKS:

1. Lesikar, Raymond V., John D Pettit, and Mary E FlatlyLesikar's, "Basic Business Communication", Tata McGraw-Hill, 11th edition, New Delhi, 2007.
2. Gerson, Sharan J., and Steven M Gerson, "Technical Writing: Process and Product", Pearson Education, New Delhi, 8th Edition, 2018.
3. Murphy, Herta, Herbert W Hildebrandt, and Jane P Thomas, "Effective Business Communication", 7th ed. Tata McGraw-Hill, New Delhi.
4. Bovee, Courtland and John V Thill, "Business Communication Today", Pearson Education, New Delhi, 11th edition, 2012.
5. McGrath, E. H., S. J, "Basic Managerial Skills for All", Prentice-Hall of India, New Delhi, 8th ed. 2011.
6. Raman, Meenakhshi, and Prakash Singh, "Business Communication. O U P", New Delhi, 2nd Edition, 2012.
7. Stuart Bonne E., Marilyn S Sarow and Laurence Stuart, "Integrated Business Communication in a Global Market Place", 3rd ed. John Wiley India, New Delhi, 2007.
8. Guffey, Mary Ellen., "Business Communication: Process and Product", Thomson and South-western, 7th edition, 2010.

WEB SERVICES LAB

C	M
2	100

COURSE OBJECTIVES

- Analyze and design a web service based application.
- Learn the security features of web services and service composition.

COURSE OUTCOMES

- Ability to write programs to Create, validate, parse, and transform XML documents.
- To develop a middleware solution based application.
- To develop web services using different technologies.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Create an XML file for any domain with multiple sublevel complexity.(Example: Students data, Employee information, Product details etc..).
- Create a DTD and XML schema for the XML file.
- Tabulate the xml content using XSL.
- Validate a XML file using java script with XMLDOM.
- Write a java program to parse an XML file using DOM.
- Write a java program to parse an XML file using SAX.
- Write a program to implement XML – RPC.
- Write a program to implement a web service using java and .NET.

MOBILE APPLICATION DEVELOPMENT LAB

C	M
2	100

COURSE OBJECTIVES

- To know about various platforms and tools available for developing mobile applications.
- To realize the differences between developing conventional applications and mobile applications.
- To learn programming skills in J2ME and Android SDK.
- To study about micro browser based applications to access the Internet using Sun Java Toolkit.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Develop useful mobile applications for the current scenario in mobile computing and pervasive computing.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Survey of Mobile Application Development Tools.
- Form design for mobile applications.
- Applications using controls.
- Graphical and Multimedia applications.
- Data retrieval applications.
- Networking applications.
- Gaming applications
- (Perform the experiments from 2 to 7 in J2ME and Android SDK framework)
- Micro browser based applications using WAP, WML and WML scripts
- (Perform experiments in 8 using Sun Java Wireless toolkit)

SEMESTER - VI**CLOUD SERVICES**

C	M
2	100

COURSE OBJECTIVES

- Understand the concept of cloud and utility computing.
- To understand the various issues in cloud computing.
- Familiarise themselves with the lead players in cloud.
- To appreciate the emergence of cloud as the next generation computing paradigm.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
- Identify the architecture, infrastructure and delivery models of cloud computing.
- Explain the core issues of cloud computing such as security, privacy and interoperability.
- Choose the appropriate technologies, algorithms and approaches for the related issues.
- To be able to set up a private cloud.

UNIT I INTRODUCTION - Evolution of Cloud Computing –System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture -IaaS – On-demand provisioning – Elasticity in cloud – Egs of IaaS providers - PaaS – Egs. Of PaaS providers - SaaS – Egs. Of SaaS providers – Public, Private and Hybrid clouds.

UNIT II VIRTUALIZATION - Basics of virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Desktop virtualization – Server Virtualization.

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

UNIT IV PROGRAMMING MODEL - Parallel and Distributed programming Paradigms – MapReduce, Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments -Eucalyptus, Open nebula, OpenStack.

UNIT V SECURITY IN THE CLOUD - Security Overview – Cloud Security Challenges – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security.

REFERENCE BOOKS:

1. “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, by Kai Hwang, Geoffrey C Fox, Jack G Dongarra, Morgan Kaufmann Publishers, 2012.
2. “Cloud Computing: Implementation, Management, and Security”, John W. Rittinghouse and James F.Ransome : CRC Press 2010.
3. “Cloud Computing, A Practical Approach” by Toby Velte, Anthony Velte, Robert Elsenpeter: TMH, 2009.
4. “Cloud Application Architectures: Building Applications and Infrastructure in the Cloud: Transactional Systems for EC2 and Beyond (Theory in Practice (O’Reilly))”, by George Reese: O’Reilly, 2009.
5. James E. Smith, Ravi Nair, “Virtual Machines: Versatile Platforms for Systems and Processes”, Elsevier/Morgan Kaufmann, 2005.
6. Katarina Stanoevska-Slabeva, Thomas Wozniak, Santi Ristol, “Grid and Cloud Computing – A Business Perspective on Technology and Applications”, Springer, 2010.

LIST OF ELECTIVES**ADVANCED DATABASES**

C	M
2	100

COURSE OBJECTIVES

- Learn the modeling and design of databases.
- Acquire knowledge on parallel and distributed databases and its applications.
- Study the usage and applications of Object Oriented and Intelligent databases.
- Understand the usage of advanced data models.
- To learn emerging databases such as XML, Cloud and Big Data.
- Acquire inquisitive attitude towards research topics in databases.

COURSE OUTCOMES

- Develop in-depth understanding of relational databases and skills to optimize database performance in practice.
- Understand and critique on each type of databases.
- Design faster algorithms in solving practical database problems.
- Implement intelligent databases and various data models.

UNIT I RELATIONAL DATABASES - Relational Model - Querying - Storage Structures - Query Processing - Normalization.

UNIT II OBJECT ORIENTED DATABASES - Introduction to Object Oriented Data Bases - Approaches - Modeling and Design - Persistence - Transaction - Concurrency - Recovery - Database Administration.

UNIT III EMERGING SYSTEMS - Enhanced Data Models - Client/Server Model - Data Warehousing and Data Mining - Web Databases – Mobile Databases.

UNIT IV CURRENT ISSUES - Rules - Knowledge Bases - Active and Deductive Databases - Distributed Databases and Parallel databases.

UNIT V DATABASE DESIGN ISSUES - Security - Integrity - Consistency - Database Tuning - Optimization and Research Issues.

REFERENCE BOOKS:

1. R. Elmasri and S.B. Navathe, “Fundamentals of Database Systems”, Addison Wesley, 2011.
2. Gary W. Hanson and James V. Hanson, “Database Management and Design”, Prentice Hall of India Pvt Ltd, 1999.
3. Alex Benson, Stephen Smith and Kurt Thearling, “Building Data Mining Applications for CRM”, Tata McGraw-Hill, 2000.

TCP/IP PROTOCOL SUITE

C	M
2	100

COURSE OBJECTIVES

- Understand the interaction between TCP/IP suite and OS.
- To study about the complicated data structures that are used to implement the various protocols.
- Learn about the routing methodologies within AS and across AS.
- Study about the timer management of TCP in detail.
- To learn the implementation of ICMP and IGMP.

COURSE OUTCOMES

At the end of the course the student should be able

- Design a sample protocol stack.
- To come up with more efficient data structures for the protocols.
- To embed the protocol suite in a better and secure way in the OS.
- To come up with the variants of TCP according to the applications.
- To modify IP according to the applications.

UNIT I INTRODUCTION - Standards – Internet – History- OSI model – Protocol suite – Addressing – Transmission media – Local Area and Wide Area Networks – Switching – Connecting devices – IP addressing.

UNIT II INTERNET PROTOCOL - Subnetting – Supernetting – IP packets – Delivery – Routing – Routing model – Routing table – Datagram – Fragmentation – Checksum – IP Design – ARP – RARP – Internet control message protocol – Internet group management protocol.

UNIT III TRANSMISSION CONTROL PROTOCOL - User Datagram protocol – UDP operation – Use – UDP design – TCP services – Flow control – Error control – TCP operation and design – connection – Transition diagram – Congestion control.

UNIT IV APPLICATION LAYER AND CLIENT SERVER MODEL - Concurrency – BOOTP – DHCP – Domain name system – Name space – Distribution – Resolution – Messages – Telnet – Rlogin – Network Virtual Terminal – Character Set – Controlling the server – Remote login.

UNIT V APPLICATION PROTOCOLS - File Transfer Protocol – Connections – Communication – Simple Mail Transfer Protocol – Simple Network Management Protocol – Hyper Text Transfer Protocol – Transaction – Request and Response messages.

REFERENCE BOOKS

1. Behrouz A. Forouzan, “TCP/IP Protocol Suite”, Tata McGraw Hill Edition 2000.
2. Douglas E. Comer, David L. Stevens, “Internetworking with TCP/IP – Volume I, II and III”, Prentice-Hall of India Pvt. Ltd., 5th Edition 2006.

SOFTWARE TESTING

C	M
2	100

COURSE OBJECTIVES

- To introduce the basics and necessity of Software testing.
- To introduce various testing techniques along with software production.
- To introduce the concepts of Software bugs and its impact.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Perform automated testing using test tools.
- Document the testing procedures.

UNIT I INTRODUCTION - Software Testing background – software bugs- cost of bugs- software testing realities- Testing Axioms – Precision and Accuracy-verification and validation- quality and reliability-testing and quality assurance.

UNIT II SOFTWARE TESTING METHODOLOGY - Functional testing- Structural testing – Static and Dynamic testing – low level specification test techniques – Equivalence Partitioning – Data testing – State Testing – formal reviews – coding standards and guidelines – code review checklist – data coverage- code coverage.

UNIT III SOFTWARE TESTING TECHNIQUES - Configuration testing – Compatibility testing – foreign language testing – usability testing – testing the documentation - testing for software security – website testing.

UNIT IV AUTOMATED TESTING AND TEST TOOLS - Benefits of automation and tools – view-ers and monitors – drivers – stubs – stress and load tools – analysis tools- software test automation – random testing – beta testing.

UNIT V TEST DOCUMENTATION - Goal of Test Planning – test phases – test strategy – resource requirements – test schedule – writing and tracking test cases- Bug tracking systems – metrics and statistics- risks and issues.

REFERENCE BOOKS:

1. Glenford J.Myers, Tom Badgett, Corey Sandler, “The Art of Software Testing”,3rd edition, John Wiley & Sons publication, 2012.
2. Ron Patton, “Software testing” , second edition, Pearson education, 2009.
3. Boris Beizer, “Software testing techniques”, Dream Tech Press,2009.
4. Srinivasan Desikan, Gopalaswamy Ramesh, “Software testing- Principles and Practices”, Pearson education, 2009.

DISTRIBUTED SYSTEMS

C	M
2	100

COURSE OBJECTIVES

- Understand the distributed system architectures.
- Know distributed system resource management.
- Understand the various fault tolerant techniques.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Develop fault tolerant distributed applications.
- Compare various distributed operating system characteristics.
- Apply efficient Resource allocation methodologies in distributed applications.

UNIT I COMMUNICATION IN DISTRIBUTED ENVIRONMENT - Introduction – Various Paradigms in Distributed Applications – Remote Procedure Call –Remote Object Invocation – Message-Oriented Communication – Unicasting, Multicasting and Broadcasting – Group Communication.

UNIT II DISTRIBUTED OPERATING SYSTEMS - Issues in Distributed Operating System – Threads in Distributed Systems – Clock Synchronization – Causal Ordering – Global States – Election Algorithms –Distributed Mutual Exclusion – Distributed Transactions – Distributed Deadlock – Agree-ment Protocols.

UNIT III DISTRIBUTED RESOURCE MANAGEMENT - Distributed Shared Memory – Data-Centric Consistency Models – Client-Centric Consistency Models – Ivy – Munin – Distributed Schedul-ing – Distributed File Systems –Sun NFS.

UNIT IV FAULT TOLERANCE AND CONSENSUS - Introduction to Fault Tolerance – Distributed Commit Protocols – Byzantine Fault Tolerance – Impossibilities in Fault Tolerance.

UNIT V CASE STUDIES - Distributed Object-Based System – CORBA – COM+ – Distributed Co-ordination-Based System – JINI.

REFERENCE BOOKS:

1. George Coulouris, Jean Dollimore, Tim Kindberg, “Distributed Systems Concepts and Design”, Third Edition, Pearson Education Asia, 2002.
2. Hagit Attiya and Jennifer Welch, “Distributed Computing: Fundamentals, Simulations and Advanced Topics”, Wiley, 2004.
3. Mukesh Singhal, “Advanced Concepts In Operating Systems”, McGrawHill Series in Computer Science, 2001.
4. A.S.Tanenbaum, M.Van Steen, “Distributed Systems”, Pearson Education, 2004.
5. M.L.Liu, “Distributed Computing Principles and Applications”, Pearson Addison Wesley, 2004.

ARTIFICIAL INTELLIGENCE

C	M
2	100

COURSE OBJECTIVES

- Provide a strong foundation of fundamental concepts in Artificial Intelligence.
- To enable Problem-solving through various searching techniques.
- To enable the student to apply these techniques in applications which involve perception, reasoning and learning.
- To apply AI techniques primarily for machine learning, vision, and robotics.

COURSE OUTCOMES

- Provides a basic exposition to the goals and methods of Artificial Intelligence.
- Study of the design of intelligent computational agents.
- The knowledge acquired through learning can be used both for problem solving and for reasoning.
- Improves problem solving, reasoning, planning, natural language understanding, computer vision, automatic programming and machine learning.

UNIT I INTRODUCTION - Artificial Intelligence Definition – Importance of Artificial Intelligence – Knowledge based Systems – Knowledge Representation – State space search – Production systems – Artificial Intelligence Programming Language – PROLOG – Heuristic search - Depth First - Breadth first – Hill climbing – 4th algorithms – Game Playing.

UNIT II KNOWLEDGE REPRESENTATION - Propositional Logic – Clause form – Predicate logic – Resolution – Inference Rules – Unification – Semantic networks – frames – conceptual depend-ency – Scripts – Representing Knowledge using rules.

UNIT III SYMBOLIC REASONING AND UNCERTAINTY - Non monotonic Reasoning – Truth maintenance systems – closed world assumption – modal and temporal Logics – Bayes Theorem - certainty factors – Bayesian networks – Dempster – Shafer Theory – Fuzzy logic.

UNIT IV NATURAL LANGUAGE PROCESSING AND DISTRIBUTED ARTIFICIAL INTEL-LIGENCE - Overview of Linguistics – grammars and Languages – Basic parsing techniques – se-mantic Analysis and representation structures – Natural language generation – natural language systems – Distributed Reasoning systems – Intelligent agents.

UNIT V EXPERT SYSTEMS - Architecture – Non production systems Architectures – Knowledge acquisition and validation – Knowledge system building tools – Types of Learning – General Learning model – Learning by induction – Generalization and specialization – Inductive bias – Explanation based Learning.

REFERENCE BOOKS:

1. Dan W. Patterson, “Introduction to Artificial Intelligence and Expert Systems”, Prentice Hall of India, Delhi, 2001.
2. Elaine Rich and Kevin Knight, S.B.Nair, “Artificial Intelligence” TMH Pub. Delhi, 2009.
3. George F Luger, “Artificial Intelligence, structures and strategies for complex problem solving”, Pearson Education, Delhi, 2001.

HUMAN RESOURCE MANAGEMENT

C	M
2	100

COURSE OBJECTIVES

To provide knowledge about management issues related to staffing, training, performance, compensation, human factors consideration and compliance with human resource requirements.

COURSE OUTCOMES

Students will gain knowledge and skills needed for successful human resources professional.

UNIT I PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT - Evolution of human resource management – The importance of the human factor – Challenges – Inclusive growth and affirmative action -Role of human resource manager – Human resource policies – Computer applications in human resource management – Human resource accounting and audit.

UNIT II THE CONCEPT OF BEST FIT EMPLOYEE - Importance of Human Resource Planning – Forecasting human resource requirement –matching supply and demand - Internal and External sources. Recruitment - Selection – induction – Socialization benefits.

UNIT III TRAINING AND EXECUTIVE DEVELOPMENT - Types of training methods – purpose-benefits- resistance. Executive development programmes – Common practices - Benefits – Self development – Knowledge management.

UNIT IV SUSTAINING EMPLOYEE INTEREST- Compensation plan – Reward – Motivation – Application of theories of motivation – Career management – Development of mentor – Protégé relationships.

UNIT V PERFORMANCE EVALUATION AND CONTROL PROCESS - Method of performance evaluation – Feedback – Industry practices. Promotion, Demotion, Transfer and Separation – Implication of job change. The control process – Importance – Methods – Requirement of effective control systems grievances – Causes – Implications – Redressal methods.

REFERENCE BOOKS:

1. Dessler, “Human Resource Management”, Pearson Education Limited, 2007.
2. Decenzo and Robbins, “Human Resource Management”, Wiley, 8th Edition, 2007.
3. Luis R.Gomez-Mejia, David B.Balkin, Robert L Cardy. “Managing Human Resource”, PHI Learning, 2012.
4. Bernadin , “Human Resource Management” , Tata Mcgraw Hill ,8th edition 2012.
5. Wayne Cascio, “Managing Human Resource”, McGraw Hill, 2007.
6. Ivancevich, “Human Resource Management”, McGraw Hill 2012.
7. Uday Kumar Haldar, Juthika Sarkar, ”Human Resource management”, Oxford. 2012.

ETHICAL HACKING & CYBER FORENSICS

C	M
2	100

COURSE OBJECTIVES

- To understand the hacking techniques of computer forensics.
- To learn about data recovery methods.
- To identify the threats in computer forensics.

COURSE OUTCOMES

- Able to distinguish between hackers and normal users.
- To apply the principles of computer forensics for security.
- To implement the data recovery methods.
- To manage threats and the tactics.

UNIT I ETHICAL HACKING - Foundation for Ethical Hacking-Ethical Hacking in Motion-Hacking Network Hosts-Hacking Operating Systems-Hacking Applications.

UNIT II TYPES OF COMPUTER FORENSICS - Computer Forensics Fundamentals – Types of Computer Forensics Technology – Types of Vendor and Computer Forensics Services.

UNIT III DATA RECOVERY - Data Recovery – Evidence Collection and Data Seizure – Duplication and Preservation of Digital Evidence – Computer Image Verification and Authentication.

UNIT IV ELECTRONIC EVIDENCE - Discover of Electronic Evidence – Identification of Data – Reconstructing Past Events – Networks.

UNIT V THREATS - Fighting against Macro Threats – Information Warfare Arsenal – Tactics of the Military – Tactics of Terrorist and Rogues – Tactics of Private Companies.

REFERENCE BOOKS:

1. John R. Vacca, “Computer Forensics”, Firewall Media, 2004.
2. Kevin Beaver, “Hacking For Dummies”, John Wiley & Sons,2012.
3. Chad Steel, “Windows Forensics”, Wiley India, 2006.
4. Majid Yar, “Cybercrime and Society”, Sage Publications, 2006.
5. Robert M Slade, “Software Forensics”, Tata McGrawHill, 2004.

E – LEARNING MANAGEMENT

C	M
2	100

COURSE OBJECTIVES

- Learn the basics of E-Learning concepts.
- Learn the content development techniques.

COURSE OUTCOMES

- Develop e – learning application on their own.
- Ability to develop contents for e-learning.
- To perform course management using tools.

UNIT I INTRODUCTION - Introduction – Training and Learning, Understanding e- learning, components and models of e- learning, Advocacy of e-learning – benefits, learning styles, criteria for choos-ing, - Applications of E-learning.

UNIT II CONCEPTS and DESIGN - E-Learning Strategy, the essential elements of e-learning strategy, Quality assuring e-learning, suppliers and resources, virtual learning environments, authoring tools, e-assessment, Learning Design Issues – purpose, general principles, designing live e-learning, designing self managed learning.

UNIT III APPLICATIONS - Moodle 2.0 E-Learning Course Development – Features, Architecture, Installation and Configuring Site.

UNIT IV COURSE MANAGEMENT - Creating – Categories, Courses, Adding Static Course Material – Links, Pages, Moodle HTML Editor, Media Files, Interacting with Lessons and Assignments – Evaluating Students – Quizzes and Feedback.

UNIT V ENHANCEMENT - Adding Social Activities - Chat, Forum, Ratings, Blocks – Types, Activities, Courses, HTML, Online Users – Features for Teachers.

REFERENCE BOOKS:

1. “Delivering E-Learning: A complete Strategy for Design, Application and Assessment”, Kenneth Fee, Kogan page, 2009.
2. “Designing Successful e-Learning”, Michael Allen, Pfeiffer Publication, 2007.
3. “Moodle 2.0 E-learning Course Development”, William Rice, PACKT, 2011.
4. “Moodle 2.0 First Look”, Mary Cooch, 2010.

COLLABORATIVE WEB DESIGN

C	M
2	100

COURSE OBJECTIVES

- Understand JOOMLA and become familiar with Extensions.
- Learn the concept of web applications for group discussion.

COURSE OUTCOMES

- Able to create web content using JOOMLA.
- Able to develop components, web sites and discussion forum.

UNIT I INTRODUCTION - History of Joomla - Content management system – Joomlasphere – Domain names - Usability – Joomla Installation – Database creation – Uploading- Web installation- Configuration – Steps – Global option – User and Media – Smart search.

UNIT II CONTENT CREATION - Defining and managing content in web site using joomla - Working with Media Manager - Menus and Menu Items – Types – Parameters – Articles- Categories – Layouts – Integration – Permissions.

UNIT III EXTENSIONS - Components – Content- Web links – News feed – Contacts – Search - Polls – Modules – Plugins – Languages – Adding extensions – Popular Extensions.

UNIT IV TEMPLATES - Basics of Joomla Templates – Design Styling and CSS – Customizing the Default Template Beez – Beez color schemes - Adding logo – Create own Joomla template with basic template structure.

UNIT V PRACTICAL APPLICATIONS - Basic Planning of Business Sites, Education Sites and Group Sites - E-commerce Web Sites – Joomla for NGOs – NPOs – Groups – Clubs – Organizations – Education - Case Studies – Education Web Site.

REFERENCE BOOKS:

1. Jennifer Marriott, Elin Waring, “The Official Joomla! “, Pearson Education, Second Edition, 2018.
2. Themas A. Powell, “The Complete Reference – Web Design”, Tata McGraw Hill, Third Edition, 2003.
3. Ashley Friedlein, “Web Project Management”, Morgan Kaufmann Publishers, 2001.
4. H. M. Deitel, P. J. Deitel, A. B. Goldberg, “Internet and World Wide Web – How to Program”, Third Edition, Pearson Education 2004.

M – COMMERCE

C	M
2	100

COURSE OBJECTIVES

- Understand Mobile Business strategies.
- To understand Mobile marketing tools and techniques.
- To know Mobile technologies.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Analyze various mobile marketing strategies.
- Market Mobile based Applications.
- Apply various tools in mobile marketing.

UNIT I INTRODUCTION - Introduction – Mobile Marketing Campaign, Fortune 500 and Mobile Marketing, consumers engagement with mobile, Terminologies.

UNIT II MOBILE MARKETING - Businesses Vs mobile marketing, classic mistakes in mobile marketing, laying foundation for successful mobile marketing campaign, understanding technology behind mobile marketing – Android, iOS, Windows Phone.

UNIT III MOBILE MARKETING TOOLS - Strategic thinking about Mobile marketing campaign, Mobile Marketing Tools – setting up mobile website for different firms, using SMS, MMS and apps to drive customers to business and other ways to attract customers.

UNIT IV MOBILE APPLICATIONS - Location Based Marketing: LBS, NFC, Bluetooth and LBA, 2D codes, Tablet, Other Mobile Applications, Business Firms connecting to customers using Mobile – case study, Mobile Marketing for B2B companies, Mobile E-commerce to Drive Revenue.

UNIT V MOBILE APPLICATION DEVELOPMENT - Mobile Payments, Present and Future Mobile Technology, Mobile Application Development.

REFERENCE BOOKS:

1. “Go Mobile: Location Based Marketing, Apps, Mobile Optimized Ad Campaigns, 2D codes and other Mobile Strategies to Grow your Business”, Jeanne Hopkins, Jamie Turner, John Wiley&Sons Inc., 2012.
2. “M- Commerce”, Paul Skeldon, Crimson Publishing, 2012.
3. “M-Commerce Technologies, Services and Business Models”, Norman Sadeh , Wiley 2002.
4. “Mobile Commerce, Opportunities, Applications and Technologies of Wireless Business”, Paul Mary, Tom Jell, Cambridge University Press, 2001.

GAME PROGRAMMING

C	M
2	100

COURSE OBJECTIVES

To get subsequent understanding of game design and development, which includes the processes, mechanics, issues in game design, game engine development, modeling, techniques, handling situations, and logic. At the end, the student will be in a position to create interactive games.

COURSE OUTCOMES

- Ability to design graphics for game programming.
- To implement 3D graphics animation techniques for game programming.

UNIT I 3D GRAPHICS FOR GAME PROGRAMMING - Coordinate Systems, Ray Tracing, Modeling in Game Production, Vertex Processing Rasterization, Fragment Processing and Output Merg-ing, Illumination and Shaders, Parametric Curves and Surfaces, Shader Models, Image Texturing, Bump Mapping, Advanced Texturing, Character Animation, Physics-based Simulation.

UNIT II GAME DESIGN PRINCIPLES - Character development, Story Telling, Narration, Game Balancing, Core mechanics, Principles of level design, Genres of Games, Collision Detection, Game Logic, Game AI, Path Finding.

UNIT III GAMING ENGINE DESIGN - Renderers, Software Rendering, Hardware Rendering, and Controller based animation, Spatial Sorting, Level of detail, collision detection, standard objects, and physics.

UNIT IV GAMING PLATFORMS AND FRAMEWORKS - Flash, DirectX, OpenGL, Java, Python, XNA with Visual Studio, Mobile Gaming for the Android, iOS, Game engines - Adventure Game Studio, DXStudio, Unity.

UNIT V GAME DEVELOPMENT - Developing 2D and 3D interactive games using OpenGL, DirectX – Isometric and Tile Based Games, Puzzle games, Single Player games, Multi Player games.

REFERENCE BOOKS:

1. David H. Eberly, “3D Game Engine Design, Second Edition: A Practical Approach to Real- Time Computer Graphics” Morgan Kaufmann, 2 Edition, 2006.
2. JungHyun Han, “3D Graphics for Game Programming”, Chapman and Hall/CRC, 1st edition, 2011.
3. Mike McShaffrfy, “Game Coding Complete”, Third Edition, Charles River Media, 2009.
4. Jonathan S. Harbour, “Beginning Game Programming”, Course Technology PTR, 3 edition, 2009.
5. Ernest Adams and Andrew Rollings, “Fundamentals of Game Design”, Prentice Hall 1st edition, 2006.
6. Roger E. Pedersen, “Game Design Foundations”, Edition 2, Jones & Bartlett Learning, 2009.
7. Scott Rogers, “Level Up!: The Guide to Great Video Game Design”, Wiley, 1st edition, 2010.

FREE / OPEN SOURCE SOFTWARE

C	M
2	100

COURSE OBJECTIVES

- Gain the knowledge of FREE / OPEN SOURCE SOFTWARE.
- Learn the concepts of TCP/IP networking and routing, server set up and configuration.
- Summarize the programming tools and basics of X windows server architecture.

COURSE OUTCOMES

- Design and configure the system networking.
- Develop GUI applications for network.
- Configure the different categories of servers.

UNIT I HISTORY AND OVERVIEW OF GNU/LINUX AND FOSS - Definition of FOSS & GNU, His-tory of GNU/Linux and the Free Software Movement, Advantages of Free Software and GNU/Linux, FOSS usage , trends and potential— global and Indian.

UNIT II SYSTEM ADMINISTRATION - GNU/Linux OS installation--detect hardware, configure disk par-titions & file systems and install a GNU/Linux distribution ; Basic shell commands -logging in, listing files, edit-ing files, copying/moving files, viewing file contents, changing file modes and permissions, process management ; User and group management, file ownerships and permissions, PAM authentication ; Introduction to common system configuration files & log files ; Configuring networking, basics of TCP/IP networking and routing, connecting to the Internet (through dialup, DSL, Ethernet, leased line) ; Configuring additional hardware - sound cards, displays & display cards, network cards, modems, USB drives, CD writers ; Understanding the OS boot up process ; Performing every day tasks using gnu/Linux -- accessing the Internet, playing music, editing documents and spreadsheets, sending and receiving email, copy files from disks and over the network, playing games, writ-ing CDs ; X Window system configuration and utilities--configure X windows, detect display devices ; Installing software from source code as well as using binary packages.

UNIT III SERVER SETUP AND CONFIGURATION - Setting up email servers--using postfix (SMTP services), courier (IMAP & POP3 services), squirrel mail (web mail services) ; Setting up web servers --using apache (HTTP services), php (server-side scripting), perl (CGI support) ; Setting up file services --using samba (file and authentication services for windows networks), using NFS (file services for gnu/Linux / Unix networks) ; Setting up proxy services --using squid (http / ftp / https proxy services) ; Setting up printer services -using CUPS (print spooler), foomatic (printer database) ; Setting up a firewall -Using netfilter and iptables.

UNIT IV PROGRAMMING TOOLS - Using the GNU Compiler Collection --GNU compiler tools ; the C preprocessor (cpp), the C compiler (gcc) and the C++ compiler (g++), assembler (gas) ; Understanding build sys-tems --constructing make files and using make, using autoconf and autogen to automatically generate make files tailored for different development environments ; Using source code versioning and management tools -- using cvs to manage source code revisions, patch & diff ; Understanding the GNU Libc libraries and linker – linking against object archives (.a libraries) and dynamic shared object libraries (.so libraries), generating statically linked binaries and libraries, generating dynamically linked libraries ; Using the GNU debugging tools --gdb to debug programs, graphical debuggers like ddd, memory debugging / profiling libraries mpatrol and valgrind ; Review of common programming practicies and guidelines for GNU/Linux and FOSS ; Introduction to Bash, sed & awk scripting.

UNIT V APPLICATION PROGRAMMING - Basics of the X Windows server architecture ; Qt Programming ; Gtk+ Programming ; Python Programming ; Programming GUI applications with localisation support.

REFERENCE BOOKS:

1. N. B. Venkateshwarlu (Ed); “Introduction to Linux: Installation and Programming”, B S Publishers; 2005.
2. Matt Welsh, Matthias Kalle Dalheimer, Terry Dawson, and Lar Kaufman, “Running Linux”, Fourth Edition, O’Reilly Publishers, 2002.
3. Carla Schroder, “Linux Cookbook”, First Edition, O’Reilly Cookbooks Series, 2004.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE

- Become familiarize with ERP process.
- Learn ERP implementation process using information technology.

COURSE OUTCOMES

- Design and Develop ERP applications by using features of ERP tools.

UNIT I BASICS OF ERP - ERP essentials – ERP evolution – ERP market – ERP tiers – information systems – Presentation tier – application tier – database tier.

UNIT II ENTERPRISE SYSTEMS - Enterprise systems – stand alone mainframe systems – client server architecture – service oriented architecture – types of enterprise systems – types of data – SAP overview.

UNIT III PROCESS IN ERP - Basic Procurement process – physical flow – document flow – information flow – financial impact- role of enterprise systems in the procurement process – fulfillment process – production process.

UNIT IV INTEGRATION - Integrated processes – Integrated processes execution – additional intra-company processes – extended (intracompany) processes.

UNIT V CASE STUDY - ERP for construction industry – ERP for a corrugated box manufacturing company – ERP for lens making company – ERP for furniture manufacturing company – ERP for toys manufacturing company - Mc Donald's story – Automobile enterprises.

REFERENCE BOOKS:

1. Simha R Magal, Jeff Word, "Essentials of Business Processes and Information Systems", Wiley Publications, 2009.
2. Marianne Bradford, "Modern ERP: Select, Implement and use Today's advanced business systems", Lulu Publishers, Second Edition, 2010.
3. Jyotindra Zaveri, "Enterprise Resource Planning", Second edition, Himalaya Publishing house, 2012.

RESOURCE MANAGEMENT TECHNIQUES

C	M
2	100

COURSE OBJECTIVES

- Understand the Linear Programming models.
- To understand assignment and transportation problem.
- To understand the concepts of project scheduling.

COURSE OUTCOMES

- Able to solve optimization problem.
- Able to design project planning methods.
- To use queuing models for network problems.

UNIT I LINEAR PROGRAMMING MODELS - Mathematical Formulation - Graphical Solution of linear programming models – Simplex method – Artificial variable Techniques- Variants of Simplex method.

UNIT II TRANSPORTATION AND ASSIGNMENT MODELS - Mathematical formulation of transportation problem- Methods for finding initial basic feasible solution – optimum solution - degeneracy – Mathematical formulation of assignment models – Hungarian Algorithm – Variants of the Assignment problem.

UNIT III INTEGER PROGRAMMING MODELS- Formulation – Gomory’s IPP method – Gomory’s mixed integer method – Branch and bound technique.

UNIT IV SCHEDULING BY PERT AND CPM - Network Construction – Critical Path Method – Project Evaluation and Review Technique – Resource Analysis in Network Scheduling.

UNIT V QUEUING MODELS - Characteristics of Queuing Models – Poisson Queues - (M / M / 1) : (FIFO / ∞ / ∞), (M / M / 1) : (FIFO / N / ∞), (M / M / C) : (FIFO / ∞ / ∞), (M / M / C) : (FIFO / N / ∞) models.

REFERENCE BOOKS:

1. Taha H.A., “Operations Research : An Introduction “ 7th Edition, Pearson Education, 2008.
2. A.M.Natarajan, P.Balasubramani, A.Tamilarasi, “Operations Research”, Pearson Education, Asia, 2005.
3. Prem Kumar Gupta, D.S. Hira, “Operations Research”, S.Chand & Company Ltd, New Delhi, 3rd Edition , 2003.

TECHNOLOGY COMMERCIALIZATION & TRANSFER

C	M
2	100

COURSE OBJECTIVES

- Learn the categories of technology commercialization.
- Understand the concepts of technology Negotiation.
- Gain knowledge about pattern filing and Commercialization.

COURSE OUTCOMES

- Device successful Commercialization process.
- Implementation of Modernization with effective material transfer agreements.
- Register patent and follow up for commercialization.

UNIT I COMMERCIALIZATION PROCESS - Technology as asset - Technology and economical changes - Competitive technology strategic options - Types of commercialization – Commercialization Process.

UNIT II TECHNOLOGY LICENSING - Technology Licensing - Rights of licence holders - Financial terms - documentation - cross licenses - Collaboration and public policy.

UNIT III TECHNOLOGY NEGOTIATION - Technology Negotiation - Preparation and conduct of negotiations - Technology outsourcing - Socio, economic, political, legal and cultural considerations.

UNIT IV TECHNOLOGY PATENTING - Technology patenting - Filing patent applications - Patent classifications - Commercializing patented technology - Arbitration and mediation.

UNIT V TECHNOLOGY DIFFUSION - Technology diffusion - WTO implication on Technology Commercialization – Global trends in technology commercialization.

REFERENCE BOOKS:

1. “Corporate Venturing”, – Zeans Block & Ian c. Macmillan – Harvard Business School Press, 1993.
2. “Innovation Management, Strategies, Implementation and Profit”, by Afuah Oxford University Press 2nd edition. 2003.
3. “Mastering The Dynamics of Innovation”, by UTTERBACK, J. Harvard Business School Press 1996.

M.Sc. PROGRAMME PROJECT REPORT

1. PROGRAMME MISSION AND OBJECTIVES

• MISSION STATEMENT

Provide quality graduate education in both the theoretical and applied foundations of computer science and train students to effectively apply this education to solve real-world problems thus amplifying their potential for lifelong high-quality careers and give them a competitive advantage in the ever-changing and challenging global work environment.

• OBJECTIVES FOR THE PROGRAMME

- To provide high quality graduate education in computer science by enhancing teaching effectiveness, refining curriculum to keep the program current with the rapidly changing computer technology and providing equipment/facilities for students to access and gain practical experience.
- To provide a high-quality graduate education in computer science that prepares students for productive careers and lifelong learning.
- To provide a postgraduate level knowledge in computer science, including understanding, analysis, management, and handling of real life information technology problems in workplace.
- To provide students with solid foundation in mathematical and computing fundamentals and techniques required to solve related problems and also to pursue higher studies and research.
- To provide the change management in Distance mode through inquiry based curriculum updating and with use of innovative E-Learning teaching aids.
- To provide graduate education that will prepare students to become thoughtful, productive members of the computing profession and community.

• INDUSTRIAL / LEARNERS DEMAND

Computer Science “is an incredibly in demand major and a high value major for students”. Industry and government need to work together to find extra-market ways to increase the supply of computer science graduates. IT, ICT and IT enabled services that is transforming today's lifestyle is going to make much more transformations, especially for a country like India, the fastest growing economies of the world.

2. RELEVANCE OF THE PROGRAMME WITH HEI'S MISSION AND GOALS

HEI'S GOALS

- To constantly raise the quality of engineering education thereby to produce superior human resource to match rapid technological developments
- To share its academic experience and infrastructure with other institutions for providing quality education across the State and help students to fulfill their dreams.
- To uphold the highest ethical and professional standards while imparting engineering education and while fulfilling its obligations to students and staff.
- To serve the society with technological advancement and to actively take part in building knowledge-based society.

HEI'S MISSION

Anna University shall strive towards a World Class Institution by producing professionals with high technical knowledge, professional skills and ethical values. The University shall be a preferred partner to the industry and community for contribution towards their economic and social development by providing high quality manpower through excellence in teaching, research and consultancy. Anna University shall be recognized as a point of reference, a catalyst, a facilitator, a trend setter and a leader in technical education.

PROGRAMMES OFFERED TO ACHIEVE HEI'S MISSION AND GOALS

The Centre for Distance Education was established in 2006 to impart quality technical and professional education through distance learning that would provide competitive edge for students and working population in the global business environment. The Centre aims to develop and disseminate professional education to every nook and corner of the state that will foster economic and social development in line with the mission of the university and HEI. The programmes are designed with a broader vision to enhance the ability of the future managers to operate in an increasingly diverse environment.

3. NATURE OF PROSPECTIVE TARGET GROUP OF LEARNERS

MSc Programme is designed and intended primarily to meet the needs of working professionals for enhancing their knowledge and for those who wish to broaden and deepen their understanding of the various techniques and strategies of managing organization and people. It provides flexibility to the learner to continue their studies without compromising on quality of education and course content, as they are pursuing their professional work.

COMPOSITION OF THE TARGET GROUP

This group largely include,

- Working Professionals
- Entrepreneurs
- Service Personnel
- Academic Faculty
- Government Officials
- Researchers
- Home Makers
- Unemployed Graduates

Nevertheless, a good part of the enrolled students include fresh graduates who want to study at leisure or engaged at some other profession. It also comprises of women learners who wish to continue their education after taking a break in study due to family life cycle, thereby unleashing their potential.

4. APPROPRIATENESS OF THE PROGRAMME TO ACQUIRE SPECIFIC SKILLS AND COMPETENCE

Computer Science course is a two years program which offers people interested in the field of computers an opportunity to develop core competence in the field of computer science and encourages them to make a mark in the much sought after IT industry.

LEARNING OUTCOMES

- Graduates will have an ability to identify, formulate and implement computing solutions.
- Graduates will have an ability to design and conduct experiments, analyze and interpret data.
- Graduates will be able to design a system, component or process as per needs and specification.
- Graduates will have the skill to work on multidisciplinary tasks and will be aware of the new and emerging disciplines.
- Graduates will demonstrate skills to use modern tools, software and equipments to analyze problems.

SPECIFIC SKILLS ACQUIRED-

- To acquire a core level of generic skills related to analytical skills for problem solving, including critical analysis, problem identification and devising practical solutions.
- This skill improvement based curriculum produces post graduates with exemplary competence in their field of specialization and makes them stand out from the crowd.

COMPETENCIES ACQUIRED -

- Graduates will have an ability to identify, formulate and implement computing solutions.
- Graduates will have an ability to design and conduct experiments, analyze and interpret data related software development projects.
- Graduates will be able to design a system, component or process as per needs and specification of the clients.
- Graduates will have the skill to work on multidisciplinary tasks and will be aware of the new and emerging disciplines that will impact development.

5. INSTRUCTIONAL DESIGN

Need based courses have been identified and the courses are developed and fine-tuned taking into consideration industry/social requirements and also aims to educate rural people professionally. The course, curriculum and syllabi are designed and evaluated by a Departmental Committee and a Syllabus Subcommittee with experts both from academia and industry. The curriculum and syllabi is then placed in the Board of Studies of the faculty of Science and Humanities for MSc. The finalized curriculum and syllabi are then placed in the Academic Council for the final approval. The governing body of the distance education ensures that the distance education curriculum has equivalent amount of credits as the regular programmes. In addition, electives have been introduced specifically for distance education programmes to suit the requirements of the dynamic changes taking place in the economy and Industry.

The course curriculum is completely revised periodically once every four years. However, electives can be introduced as and when the need arises after obtaining necessary approvals from the appropriate academic bodies of the University. Approval of Board of Studies and Academic Council are obtained whenever modifications/additions are made in the existing curriculum and syllabi.

a. CURRICULUM DESIGN

M.Sc. COMPUTER SCIENCE (DISTANCE MODE)

REGULATIONS - 2018 CURRICULUM

SEMESTER - I

Course Title	Credits*	Marks
Computer Organization	2	100
Problem Solving and Programming	2	100
Database Management System	2	100
Software Engineering	2	100
Mathematical Foundations of Computer Science	4	100
Programming Lab	2	100
Database Management System Lab	2	100
TOTAL	16	700

SEMESTER - II

Course Title	Credits*	Marks
Computer Networks	4	100
Object Oriented Programming	2	100
Data Structures and Algorithms	2	100
Operating System	4	100
Software Project Management	2	100
Object Oriented Programming Lab	2	100
Data Structures and Algorithms Lab	2	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Information Security	2	100
Data Warehousing and Mining	2	100
Web Programming	2	100
Object Oriented Analysis and Design	4	100
Elective I	2	100
Web Programming Lab	2	100
Software Development Lab	2	100
TOTAL	16	700

SEMESTER - IV

Course Title	Credits*	Marks
Elective II	2	100
Elective III	2	100
Project Work	12	200
TOTAL	16	400
Total No. of Credits and Marks	66	2500

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

ELECTIVE - I

Course Title	Credits*	Marks
Mobile Computing	2	100
XML and Web Services	2	100
Theory of Computation	2	100

ELECTIVE - II

Course Title	Credits*	Marks
Computer Graphics and Multimedia Systems	2	100
Ethical Hacking and Cyber Forensics	2	100
Software Testing	2	100

ELECTIVE - III

Course Title	Credits*	Marks
Cloud Computing	2	100
Visual Programming	2	100
E Commerce	2	100

b. DETAILED SYLLABI

Enclosed vide Annexure I

c. DURATION OF THE PROGRAMME

The minimum and maximum period for completion of the M.Sc. Programme is given below:

Programme	Minimum No. of Semesters	Maximum No. of Semesters*
M.Sc	4	12

*includes the period of break of study.

Break of study: If any candidate intends to temporarily discontinue the programme at any point of time during the programme for valid reason he/ she shall apply for break of study in the prescribed format with necessary documents to the Director, Centre for Distance Education not later than the last date for enrolling for the semester examination of that concerned semester. The candidates permitted to rejoin the programme after break of study / prevention due to lack of attendance, shall be governed by the Curriculum and Regulations in force at the time of rejoining.

d. FACULTY AND SUPPORT STAFF

CDE is functioning with a Director, one Additional Director in the rank of full time Professor and three Deputy Directors in the rank of Associate Professors. The Additional Director and the Deputy Directors are in-charge of each of the academic programmes offered by the CDE. They are responsible for Curriculum & Syllabi Design, Identification of Course Writers and Reviewers and Editing of the Course material.

DIRECTOR

CDE is headed by the Director, who is a full time faculty member of the University appointed by the Vice-Chancellor of Anna University to facilitate the development, implementation and monitoring the programmes offered at CDE and to attend to all administrative matters concerned with the activities of the Centre.

Director is responsible for the following functions:

- Ensures programmes offered through distance education and the instructional design of each programme to meet the educational standards of the University.
- Develop and implement policies and guidelines for effective delivery of distance education programmes.
- Co-ordinate with the Deputy directors, Regional Centres and Study Centres to respond swiftly to problems related to distance learning.

- Continuously monitor the student support services mechanism and incorporate technology based changes in the system to deliver services more effectively and efficiently.
- Supervise the staff at CDE, set priorities, assign work and conduct employee evaluations.
- Administer an effective financial discipline in line with the budget allocated by the University.

DEPUTY DIRECTOR

- Deputy Director is a full time faculty member of the University appointed by the Vice Chancellor of the Anna University to administer, monitor and take care of each of the program offered by the CDE.
- Oversees the implementation of the curriculum and the academic programs.
- Assist the Director, CDE in carrying out the academic calendar, starting with the admission process, preparation of the norms for study centres in conduct of classes, identification and managing faculty for contact classes.
- Monitors the internal and University evaluation process and attend all administrative matters concerning the program including the revision of electives and curriculum at appropriate timeline.
- Serve as convener of the Central Steering Committee, that completely monitors the project work, from approving the Guides for each semester, approve schedule project work, monitoring committee and help process the results for the University.
- Empowered by the University to operate the funds for the set assigned to them as well as the study centres of the CDE also.

FACULTY

- Handling MSc classes for the Distance Education students and guiding them for their project work.
- Assisting in the change of Regulations and Curriculum.
- Coordinating with all Study Centres, to maintain academic activities for all specializations including project work.
- Coordinating for the preparation of study materials for all semesters.
- Assisting in the admission work, counseling new students and other issues such as break of study, exemptions etc.
- Assisting the Central Steering Committee for the project work done by the end Semester students.
- Scrutinizing the list of project guides received from all the Study Centres to prepare approved list of guides.
- Preparation of Project Schedule and Report for first and second reviews.
- Co-ordinating with the Central Steering Committee members in the evaluation of project works of students, study centre, project guides and viva voce examinations.

SOFTWARE DEVELOPER

- A customized software has been created for the collection of fees and it has been integrated with dedicated accounting software to have consolidated report on receipts and payments with breakup.
- Refund of Caution Deposit is being made by NEFT based on their data provided in the application at the time of admission. To monitor and track the status of caution deposit application, a software has been designed.
- An integrated Student Tracking System has also been created which includes queries relating the Spelling Correction in the name, Change of Study Centre, Change of Specialization, Break of Study, Change of DOB, Request of Duplication ID card etc.
- An exclusive Software for recording and monitoring the students attendance has been created and uploaded in Anna University portal to enable Study Centres to feed their data through online within the prescribed time limit. After the completion of all the contact classes, prevention list is automatically generated by the software for submission to the Controller of Examinations. Fee receipts are also being generated automatically after duly verified regarding the students eligibility for subsequent semesters.

WEB DESIGNER CUM DEVELOPER

- Advertisement for admission are being uploaded in Anna University Website.
- Candidates those who are unable to come in person, they can download the application form from AU website, for which blank application has been uploaded and monitored by the web designers by assigning the application number etc.
- After the entrance examination, rank list cum counseling call letter is being uploaded. Candidate can download the counseling call letter after entering their registration number and date of birth.
- Semester Fee Schedule, Contact Classes and other details are uploaded in AU website regularly.
- Regulations & Syllabi, Previous years semester examination question papers and other online study materials are uploaded for the benefit of students.
- Study Centre related activities are also being uploaded for effective communication. Correspondence from the Controller of Examinations regarding examination, fee etc. are also being uploaded in AU website.
- MBA Project and MSc Projects are also monitored through online.

SUPPORT STAFF

Administrative staff i.e. Deputy Registrar, Assistant Registrar, Superintendent/Section Officer, Assistant are co-ordinating the activities of the Centre for the following activities with the assistance of other dedicated temporary Professional Assistants, Web Developers, Software Developer, Clerical Assistants, Office Assistants and menials.

ADMINISTRATION

- To prepare the advertisement for inviting applications for calendar year / academic year admissions and hosting the advertisement in Anna University web portal.
- To identify the examination centre for the conduct of Entrance Test
- Allotment of candidates for the entrance examination
- Publishing the Rank list cum Call letter to the candidates to attend counseling session for admission
- Counseling for admission to distance education programmes
- Allotment of study centres to the candidates based on their choice
- Intimation of schedule for contact classes
- Disbursement of study centre charges to the Study Centres
- Disbursement of honorarium to the experts
- Purchase of Computers and other lab equipments
- Purchase of furniture and other office equipments

FINANCE

- Budget Estimates for every year are projected and submitted to the Finance Committee for approval.
- Expenditure being met based on the approved budgetary amount
- To monitor the cash flow, Centre is maintaining the mandatory finance and accounts registers such as Appropriation Register, Cash Book, Compilation Register, Advance Register, Cheque issue Register etc.
- Every year Annual Accounts for this centre being prepared and submitted to the Concurrent Audit Section for necessary audit.

MATERIAL DISTRIBUTION

- Material distribution is done at CDE office and a Professional Assistant who is qualified in library science is in-charge of maintaining and distributing study materials.
- Stock register is maintained for receipt and disbursement of study material. Orders are placed well in advance and CDE provides study material to the students immediately on the day they are admitted.
- The material issue is completely integrated and hence, once the student pays his/her fees in the subsequent semester, they become eligible to receive the books.
- At the end of every semester physical stock verification is done to ensure the quantity for which orders are to be placed in the subsequent semester.

INSTRUCTIONAL DELIVERY MECHANISM

The program comprise four semesters of which the three semesters contain course work and the last semester has course works in addition to a project work leading to the submission of a master's thesis.

The course work comprises the contact classes for each semester announced by the Study Centre Coordinator and courses enrolled are offered by the faculty members approved. The contact classes will be held during the weekends, the Saturdays and Sundays.

Students are given two assignments during each semester for each course enrolled by the Course Instructors. Students should do this as assignments and submit at dates announced. Evaluation of the assignments will make up the Continuous assessment marks.

Students will write an end semester examination for the theory at the end of each semester by the Controller of Examinations, Anna University.

The project work will be done under the supervision of a Guide approved by the University.

- **MEDIA FOR DELIVERY**

The university adopts a unique methodology of instruction which is different from that being adopted for our regular mode programmes. The methodology is more learner - oriented and the students are expected to take active participation in the teaching learning process. The university follows a multimedia approach for delivering knowledge to the students.

Print Material: Self Learning Material which is self explanatory, self directed is developed and supplied to the students. The learning material is designed as per the credit structure of the programme. It is more interactive in that it contains learning objectives, learning activities and problem solving activities for self assessment. The contents are divided into small sections and sub sections for effective learning and two way communications between the learner and the content.

E-learning Material: Power Point Presentations are prepared by the faculty at CDE and is uploaded in our website and made accessible to the students for all the courses of each programme.

Counseling Sessions: Counseling Sessions are held as per the schedule designed by the CDE well in advance prior to the conduct of classes. They are held on week-ends, i.e. Saturday and Sundays. The contact sessions are decided as per the credits allotted to each course in each programme. For example, four credit theory course is assigned 16 hours of contact session. The coordinator of the study centre shall ensure that contact classes are conducted as per the schedule and every academic counselor outlines the salient points and adopt a blended mode of learning making it more learner centered.

- e. **STUDENT SUPPORT SERVICE SYSTEM**

The CDE centre of Anna University has established four Regional Centres and seven Study Centres throughout Tamil Nadu. They are engaged in providing pre- admission counseling for potential learners, support for admission activities, act as information centres, distribute study

material to the students admitted. Apart from providing counseling facilities they also act as examination centres.

Once a student gets admitted to CDE, the CDE headquarters creates a database with all the essential particulars that provides online solutions to all the student related queries.

The queries relating to Corrections in name, Change of Study Centres, Change of Specialization, Break of Study, Corrections in DOB, Refund of Caution Deposit, Issue of Duplicate ID Card are made by forms available online and are dealt with by the technical support team of CDE retrieving data from the database.

Each batch is assigned a set in charge who responds swiftly to all the demands of the students relating to that particular batch. The entire batch in charges and administrative staff are connected through intranet and every change made by them after the approval of the Director gets reflected in the database.

Information regarding Schedule of classes, Internal marks, End semester examination schedule are provided through study centers and is also available on the web. Model End semester question papers are also available on the web.

The End semester examination results are announced within a month after completion of the examinations and are available on the web.

6. PROCEDURE FOR ADMISSION, CURRICULUM TRANSACTION AND EVALUATION

a. ADMISSION PROCEDURE

Admission is done directly by the Head quarters. Students are admitted in two sessions every year; the Academic year batch during July session and Calendar year batch during January session. Advertisements are placed in media to invite applications for each session.

Students Admitted to M.Sc program are required to have obtained any degree with mathematics / statistics as one of the subjects at the Degree level (or) Any degree with Mathematics. Degrees must have been obtained through formal mode (10 +2 or equivalent).

Students admission is done by the Centre for Distance Education, Anna University. Student enrolment is done programme wise in every year: **CY** - Calendar Year - (January Session) and **AY** - Academic Year - (July Session)

Blank application form can be downloaded from the web-site “annauniv.edu/cde” and the same may be filled up. The completed application along with the demand draft application fee should be sent “The Director, Centre for Distance Education, Anna University ” before the last date of receipt of application as prescribed from time to time.

Candidates or their authorized representative should attend the counseling with all original certificates with Demand Draft towards 1st semester fee.

Study Centre will be provisionally allotted through counseling as per their choice.

FINANCIAL ASSISTANCE

Financial Assistance is extended as follows:

- Tuition Fee is fully exempted for Differently abled persons provided they produce a certificate from the Chairman, District Medical Board in the prescribed format.
- 50% tuition fee concession is given to for regular staff members who are working in Anna University.

b. DELIVERY MECHANISM (WEB BASED)

The contact classes are conducted at Class rooms available in the Headquarters of CDE, regional centres & study centres which are departments of the Anna University / Affiliated Colleges. These class rooms are equipped with facilities including multi-media projection systems, white boards, internet connectivity and smart boards. Each centre is headed by a coordinator and assisted by counselors and faculty according to the strength of the students. On the Academic front, the functions of the staff through whom academic transaction takes place is shown below:

Staff	Functions
Study centre Coordinator Each study centre has a study centre coordinator The Study centre coordinator is either the Principal of the Institution or a Senior faculty member	In charge for all the students studying through the distance education scheme of Anna University Chennai. Is responsible for maintaining all accounts pertaining to the activities of the study centre Is responsible for receipt and distribution of course material
Counselors The study centre coordinator is required to appoint separate counselors for each of the programmes of each set admitted. A Counselor can at a time be in charge for maximum of 4 batches of 60 students each The Counselor is a faculty member / visiting faculty of the respective programmes.	Is responsible for arranging senior faculty members to handle contact classes and/ or labs Is responsible for regular conduct of classes Is responsible for maintaining the attendance details of all students allocated to him/her Is responsible for collecting the internal assessment marks from all faculty handling classes and forwarding the same to the Coordinator
Faculty handling classes The study centre coordinator and counselor are expected to identify faculty from their own institution or from affiliated institutions for handling classes	Is responsible for teaching classes regularly according to the syllabus and clearing the doubts of the students. The course is all about presenting the material using PowerPoint to include insights and supporting data. Design principles for effective visuals and slides. Is responsible for taking attendance regularly Is responsible for conducting and evaluating periodic assessments for calculation of internal marks.

c. ACADEMIC PLANNER

MONTHS	WEEKS	ACADEMIC YEAR ACTIVITES	CALENDAR YEAR ACTIVITES
October	First	Semester begins for Academic year	-
	Third	Release of Guidelines for project work Online Registration begins	-
November	First	-	Publication of Advertisement for Calendar year batch
	Third	Last date for submission of Project proposal Online Registration closes	-
	Fourth	Updating the Project proposal status	-
December	First & Second	First Review of Project work	-
	Third	Last date for submission of 1st Review marks to CDE by study centres	-
	Fourth	Project - Updating the recommended status by CDE	-
January	First	Contact classes for Semester ends	-
		Attendance finalized, Prevented list generated	-
		Second Review of project work	-
	Third	Last date for submission of second Review marks to CDE by Study centres	-
	Fourth	Last date for sending the attendance, Internal Assessment and prevention list for Project work to COE	-
Semester examination fee collection		-	
February	First	-	Last date for receipt of MBA, MCA application for CY batch
		Project - Link opens for Online submission of project work	-
	Second	-	Conduct of Entrance Test for CY
		COE - End Semester Examination begins	-
	Fourth	-	Entrance Test - Publication of result
Project work - Last date for Online submission (Full project - hard & CD). Last date to submit internal marks to COE and CDE by study centres.		-	
March	First	Last date for submission of Viva Voce panel to COE.	-
		Project - Viva voce Examination begins	Semester fee collection begins
	Second	End Semester examination ends	-
		-	Counseling & Admission for CY
Third	Last date for sending Viva voce examination marks to COE	-	

April	First	-	Semester begins for Calendar Year batch
	Third		Release of Guidelines for project work Online Registration begins
May	First	Publication of Advertisement for Academic year batch	
	Third		Last date for Submission of Project proposal Online Registration closes
	Fourth		Updating the Project proposal status
June	First & Second		First Review of Project work
	Third		Last date for submission of First Review marks to CDE by study centres
	Fourth		Project - Updating the recommended status by CDE
July	First		Contact classes for Semester ends
			Attendance finalized, Prevented list generated
			Second Review of project work
	Third		Last date for submission of Second Review marks to CDE by Study centres
Fourth			Last date for sending the attendance, Internal Assessment and prevention list for Project work to COE
			Semester examination fee collection
August	First	Last date for receipt of MBA, MCA application for AY batch	
			Project - Link opens for Online submission of project work
	Second	Conduct of Entrance Test for AY batch	
			COE - End Semester Examination begins
	Fourth	Entrance Test - Publication of result	
Last date for receipt of MSc (CS) application for AY batch			
		Project work - Last date for Online submission (Full project - hard & CD). Last date to submit internal marks to COE and CDE by study centres.	
September	First		Last date for submission of Viva Voce panel to COE
		Semester fee collection	Project - Viva voce Examination begins
	Second		End Semester examination ends
		Counselling & admission for AY batch	
Third		Last date for sending Viva voce examination marks to COE	

d. EVALUATION PROCEDURE

Each course has internal and External evaluation to pass the course and earn credits.

INTERNAL EVALUATION

Periodical assignments are given and internal tests are conducted periodically. These assignments and tests are used to calculate the internal marks

COURSE EVALUATION

Type of Course	Internal Assessment	End Semester Examination
Theory	20%	80%
Practical	20%	80%

Project Work

Internal Assessment	Evaluation of Project report by External Examiner	Viva-Voce Examination
20%	30%	50%

EXTERNAL EVALUATION

The End semester Examinations in case M.Sc will be conducted during February and August months of each year by the Controller of the Examinations, Anna University. All the activities like paper setting, Conduct of examination, Declaration of results and Assessing the examination papers are done in-house by the Office of the Controller of Examinations, Anna University.

The question papers are set by experts in the respective fields of study. They are chosen from among a panel of experts (prepared from the list of teachers & experts sent by the various Universities and leading colleges). This is done directly by the confidential section of the Office of the Controller of Examinations.

There shall be one end semester examination of 3 hours duration for each theory course. The examinations shall ordinarily be conducted between May and July during the odd semesters and between November and January in the even semesters. For the practical examinations (including project work), both internal and external examiners shall be appointed by the Controller of Examination.

The end semester evaluation of the Project work will be based on the project report and a Viva-Voce Examination by a team consisting of the guide and External Examiner(s) who are appointed depending on the chosen areas of specialization of the students. The External Examiner(s) shall be appointed by the Controller of Examinations, Anna University Chennai.

If a student indulges in malpractice in any of the end semester / internal examinations, he / she shall be liable for punitive action as prescribed by the Director, Academic Courses as per the University regulations from time to time.

The End semester examinations are conducted by the Office of the Controller of Examinations, Anna University Chennai as per the method followed for regular programmes. The Examinations are conducted at various study centre/colleges in the region throughout the country by appointing a Chief Superintendent who in turn conducts the examination with the Hall invigilators from among the faculty of local colleges. The overall conduct is supervised by the Anna University representatives sent by the University.

A candidate who secures not less than 50% of total marks prescribed for the courses with a minimum of 50% of the marks prescribed for the end-semester Examination in both theory and practical courses shall be declared to have passed in the Examination.

If a candidate fails to secure a pass in a particular course he / she shall reappear for the examination till he / she secures a pass. However, the internal assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts.

A student who has passed any course / all the courses prescribed in the curriculum for the award of the degree shall not be permitted to re-enroll to improve his/her marks in a course or the aggregate marks respectively.

REVALUATION

Revaluation procedure is available for the students who opt for the same by paying Revaluation fee. Also Photocopies of Answer papers are given to the students who requires the same on payment of fees for the same.

A candidate can apply for revaluation of his/her semester examination answer paper in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations through the Coordinator of the Study Centre concerned and Director, Centre for Distance Education. The Controller of Examination will arrange for the revaluation and the results will be intimated to the candidate concerned through the Coordinator of the Study Centre. Revaluation is not permitted for practical courses and for project work.

Copies of the answer scripts for the theory course(s) can be obtained from the Controller of Examinations, Anna University on payment of fee specified for this purpose.

The final Project Report for all the programmes shall be submitted at the end of the final Semester as per the schedule announced by the Central Steering Committee. The Project Report prepared according to approved guidelines and duly signed by the guide(s) shall be

submitted to Coordinator of Study Centre or Coordinating Centre. The final project report must also be submitted online as a word document to the Director, CDE on or before the specified date.

If the candidate fails to obtain 50% of the Continuous Assessment marks in the Project Work, he/she will not be permitted to submit the report and has to re-enroll for the same in the subsequent semester.

If the candidate fails to submit the Project Report on or before the specified deadline he/she is deemed to have failed in the Project Work and shall re-enroll for the same in a subsequent semester.

If the candidate fails in the viva-voce examination he/she shall re-enroll for the same in the subsequent semester.

7. LABORATORY SUPPORT AND LIBRARY RESOURCES

a. LABORATORY SUPPORT

The CDE has a Computer Lab with state-of-the-art infrastructure located in a spacious air conditioned hall, housing a local server, 84 personal computers connected by high speed Internet and wireless networks, LAN and printers, white board with multi-media projection facilities.

SERVERS WITH CONFIGURATION

SL.NO.	SERVER MODEL	CONFIGURATION	SOFTWARE	USAGE
1	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS/ Oracle 10 g	Fees collection/book material stock/accounts/ Counseling
2	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS/ Oracle 10 g	Web server
3	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS /ASP.Net	Student Attendance / Student Management
4	Dell Power Edge R710	Intel Xeon Processor 2.00 GHz/8 GB RAM/ 1 TB Storage	Linux Ubuntu 14.04 / Windows 2008 Server OS/Oracle 10g/C++	Computer Lab
5	Wibro	Intel Xeon Processor 2.00 GHz/8 GB RAM/ 1 TB Storage	Windows 2008 Server OS	Web server backup

LAB COMPUTERS WITH CONFIGURATION

SL.NO.	COMPUTER MODEL	TOTAL NO. OF COMPUTER	CONFIGURATION	SOFTWARE
1	Dell	24 Nos.	Intel i7 processor /8 GB RAM/1 TB Storage	Windows 7 Professional OS/ D2K, C++, Putty, Java, Netbeans,
2	Acer	60 Nos.	Intel i5 processor /4 GB RAM/500 GB Storage	Android, MS Office, VB, Visual studio 2008

The Centre for Distance Education, Anna University Chennai utilizes the services of Ramanujan Computing Centre, the centralized computing facility available at the University in times of necessity.

In addition, the Centre for Distance Education, Anna University Chennai has the provision to utilize the services of Educational Multimedia Research Centre for studio facilities for preparation of Multimedia material.

b. LIBRARY RESOURCES

The centre has an exclusive library which caters to the needs of the students of distance education. Library books are maintained in racks and shelves with glass doors. Library caters to the information needs to the faculty, and PG students. Books are available on the following areas of study

- Management Studies.
- Information & Communication Studies.
- Mathematics, Statistics & Computer Science Studies.
- General Knowledge & Languages.
- Competitive Examinations (TNPSC, UGC-NET, RRB, SSC, UPSC, etc.).
- Dictionaries and University annual magazines and daily news papers.

A stock register is maintained and all purchases and issues are registered in it. Books are maintained and issued with the help of Library management system software designed for this purpose.

Books are available both for closed reference and also for issue. Students can borrow books returnable in two weeks time. Online reference is also made available to both staff and students.

Subject wise and title wise count for Library books:

Sl No	Department (Programme)	No. of. Titles	No. of . books
1.	GENERAL	75	75
2.	MBA	566	2294
3.	MCA	142	439
4.	MSC	54	250
Total		837	3058

A Professional Assistant who is qualified Librarian is in-charge of the library of the CDE and the library is kept open on all working days.

8. COST ESTIMATION OF THE PROGRAMME

COST ESTIMATION	2018-19	
	AMOUNT (Rs.)	
PROGRAMME DEVELOPMENT COST		
Printing of Study Material	1150000	
Course Reviewer charges		
PROGRAMME DELIVERY COST		
Study Centre charges	2500000	
PROGAMME MAINTENANCE COST		
Remuneration to Csc committee Members	2193500	
Consolidated Pay for Visiting Faculty		
Entrance Test and Counselling expenses		
Wages / Emoluments for temporary staff members		
Postage and Telegrams		
Remuneration & Honorarium		
Stationery & Printing charges		
Advertisement charges		
INFRASTRUCTURE DEVELOPMENT COST		
Purchase of furniture and repairs		1160000
Computer & other Accessories		
Purchase and maintenance of office equipments		

Books & Periodicals	
Building & Amenities	
ADMINISTRATIVE COST	
fuel charges	
Contingencies	
Maintenance of Vehicles and hire charges	
Security & Housekeeping charges	
Refreshments and Hospitality	
Telephone charges	
Travel expenses	
Design & Development	
Conduct of meeting	
Civil Maintenance	
Electrical Maintenance	
TOTAL	434500
	7438000

9. QUALITY ASSURANCE MECHANISM AND EXPECTED OUTCOMES

EXECUTIVE COMMITTEE

The Centre for Distance Education of Anna University is governed by an Executive Committee, chaired by the Vice-Chancellor of the University. Executive Committee comprises of internal members from related departments of Anna University, subject experts from other Universities / Institutions and renounced management experts from industry.

The Executive Committee is convened once in 6 months to review the academic, administrative and finance related activities of the centre. The approval of Executive Committee is mandatory for all the ongoing activities and future development plans.

CENTRAL STEERING COMMITTEE

In addition to the CIQA to be established, to ensure quality in the Project work CDE is already functioning with a Central Steering Committee for each programme headed by the Director , CDE and includes experts from our University departments of the concerned Programmes. It is established to directly approve, monitor, track and administer the project work and its internal evaluation at the Centre for Distance Education, Anna University, Chennai.

CENTER FOR INTERNAL QUALITY ASSURANCE (CIQA)

In order to have a dynamic quality assurance system, CDE is in the process of establishment of a Center for Internal Quality Assurance (CIQA), to carry out the various functions relating to maintenance of quality, continuous improvement, regular monitoring of academic and administrative activities, deciding the programme delivery mechanism and to oversee and report the effectiveness of the system specified in the UGC (ODL) regulations 2017.

a. **REVIEW MECHANISM**

CURRICULUM REVISION

As per Anna University policy, the Curriculum Revision takes place every four years. The curriculum Revision for M.Sc as per UGC ODL Norms 2017 was approved and will be implemented from 2018-19.

The faculty to teach the contact classes are selected as per University norms for teaching staff and approved by the Central Steering Committee appointed by the Vice Chancellor of the University.

STUDENTS FEEDBACK

Every semester the students of each batch are invited to provide an online “Student Feed Back” questionnaire form for each of the course studied by them. The questionnaire is designed to assess the quality of teaching, coverage of the syllabus, class room tools used, and overall conduct of classes and the infrastructure of the Study Centre concerned. All the feedback responses are pooled/evaluated for each course and is considered in the management of faculty for the next semester classes.

The students are free to meet the counselors / Technical Staff / Program in charge / Director CDE during office hours for any of their requirements. They can also interact through the CDE website also.

b. **MONITORING MECHANISM**

ATTENDANCE FOR CONTACT CLASSES

Ideally every student is expected to attend all counseling sessions / classes and secure 100% attendance. However, the student must have a minimum of 50% attendance, to be eligible to appear for the end-semester examination in that semester, failing which, he / she is required to repeat the incomplete semester in the next semester.

Every course instructor is required to maintain an ‘ATTENDANCE AND ASSESSMENT RECORD’ which consists of attendance marked in each counseling session or practical or project work interaction. This should be submitted to the Coordinator of the Study Centre for checking the conduct of the interactive counseling sessions, syllabus coverage and the records of assessment marks and attendance.

Online portal for attendance entry is kept opened for the subsequent 3 days after the weekends on which classes are conducted. The study centres will make online entry of the attendance provided by the course instructors. It is locked on the third working day and no study centre can enter attendance without the approval of the Director, CDE. After 50% classes are over, the attendance particulars of all the students are published to enable them

to know their status. At the end of the semester, prevention list for all centres are prepared at the office of the Director, CDE and sent to the Controller's office to arrive at preparing the eligible list of students for writing the examination. Hence CDE insists on monitoring the students attending the contact classes.

PROJECT WORK

Since project work is an integral component of the M.Sc program, and carries more credits, CDE adopts a two stage monitoring system. A project proposal validated by the guide has to be submitted online to the **Central Steering Committee**, for approval, as per the schedule in the project semester. The students can proceed with their project work only after their proposals are reviewed and approved by the **Central Steering Committee**, Centre for Distance Education.

In the next stage, there shall be two project reviews (each 100 marks) by the Project Monitoring Committee (PMC) at the study centers constituted by the Coordinators and approved by the Director (CDE), in the project semester. The student is require to make a presentation on the progress made before the PMC. The continuous assessment marks from both reviews shall be 40 marks which includes marks provided by the guides of the concerned project based on their interaction with them.

c. GRIEVANCE REDRESSAL MECHANISM

The Anna University has in place an grievance redressal mechanism for its members including the sexual harassment cell. Any member of the University can access the services through the University portal to avail the services and get their problems resolved.

The CDE will develop an internal cell comprising 3 members to address the needs / problems of the students. A link will be created in the CDE website for the students to access the services online.

**ANNA UNIVERSITY CHENNAI
MSC (DISTANCE MODE)
REGULATIONS – 2018
SYLLABUS I TO VI SEMESTERS**

SEMESTER – I

COMPUTER ORGANIZATION & DESIGN

CREDITS:2

COURSE OBJECTIVES

- Understand the fundamentals of Boolean logic and functions.
- To have a thorough understanding of the basic structure and operation of a digital computer.
- Design and realize digital systems with basic gates and other components using combinational and sequential circuits.
- Discuss in detail the operation of the arithmetic and logic unit.
- To study the instruction sets and operation of a processor.
- To study the different ways of communicating with I/O devices and standard I/O Interfaces.
- To study the hierarchical memory system including cache memories and virtual memory.

UNIT - I

Digital systems, binary numbers, octal, hexadecimal conversions, signed binary numbers, complements, logic gates, Boolean algebra , K-maps, standard forms, NAND-NOR implementation

UNIT - II

Combinational circuits, adder, subtractor, ALU design, decoder, encoder, multiplexers, Sequential circuits: latches, flip-flops, registers, memories, up- down counters

UNIT - III

Von-neumann architecture, processor :definition, structure ,category, technology, ALU concept, stored programs, fetch execute cycle, instruction formats, clock rate instruction rate, pipeline, current processors, multi core processors

UNIT - IV

Physical memory , addressing, virtual memory, address translation, paging, cache, L1,L2,L3 cache memories, cache mapping, LRU replacement

UNIT - V

Data transfer, Serial and Parallal data transfer, Full duplex- half duplex interaction, Bus interface, Programmed I/O, Polling, Interrupt driven I/O, Hardware interrupt mechanism, Interrupt vectors, Multi level of interrupts,DMA, buffer chaining, operation chaining,

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Master the binary and hexadecimal number systems including computer arithmetic.
- Design and implement digital systems with basic gates and other components using combinational and sequential circuits.
- Be familiar with the Von Neumann architecture.
- Be familiar with the functional units of the processor and addressing modes, instruction sets.
- Be familiar with the memories and cache subsystem.
- Be familiar with different ways of communicating with I/O devices and standard I/O interfaces.

REFERENCES

1. Marris mano, "Digital design" PHI/Pearson fourth edition 2006
Essentials of Computer Architecture Douglas E.Comer Pearson sixth edition 2012
2. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, "Computer Organization", Tata McGraw Hill, Fifth Edition, 2002
3. William Stallings, " Computer Organization and Architecture – Designing for Performance", Pearson Education, Seventh Edition, 2006.
4. David A Patterson and John L. Hennessy, " Computer Organization and Design, The Hardware/Software Interface", Morgan Kaufmann / Elsevier, Third Edition, 2005.

COURSE OBJECTIVES

- Understand the various problem solving techniques.
- To be aware of the top down design technique.
- To learn the syntax of C.
- To be exposed to the file processing techniques of C.
- To be familiarized with the preprocessor directives.

UNIT – I PROBLEM SOLVING

Introduction – The Problem–Solving Aspect – Top Down Design – Implementation of Algorithms – Program Verification – The Efficiency of Algorithms – The Analysis of Algorithms.

UNIT - II BASICS OF C PROGRAMMING

Introduction to C Programming Environment – History of C – C Standard Library – Basics of C Program Development Environment - Introduction to C Programming - A simple C Program – Memory Concepts – Arithmetic – Decision Making – Relational Operators – Assignment – Increment and Decrement Operators- Structured Program Development – Algorithms – Pseudocode- Control Structures – if , if/else Selection Structure.

UNIT - III REPETITION CONTROL STRUCTURES, FUNCTIONS AND ARRAYS

Essentials of Repetition – The while, do/while Repetition Structure - Counter-Controlled Repetition – for –Multiple Selection - Switch – Break – Continue – Logical Operators Functions- Definitions - Prototypes –Header Files – Storage Classes – Scope Rules Recursion- Comparing Iteration and Recursion. Arrays – Declaration – Usage – Passing Arrays to Functions.

UNIT - IV POINTERS, STRINGS AND AGGREGATE DATA TYPES

Pointer Variable Declarations and Initialization – Operators – Uses--Pointer Expressions and Pointer Arithmetic – Relationship between Pointers and Arrays – Arrays of Pointers – Pointers to Functions. Fundamentals of Strings and Characters – Character Handling Library - String Handling Library. Structures- Definition – Initialization – Unions – Bitwise Operators – Enumeration Constants.

UNIT - V STREAMS, FILES AND PREPROCESSOR

Streams – Formatting Output with printf -- Formatting Input with scanf.Files – Sequential-Access Files- Creation – Reading –Random-Access Files – Creation – Reading. C Preprocessor – Introduction- #include - #define – Symbolic Constants- Macros- Conditional Compilation - #error - #pragma – Operators # and ## - Line Numbers – Predefined Symbolic Constants.

COURSE OUTCOMES

Upon completion of the course, the students should be able to

- Design and implement C programs for any given problem.
- Work with existing programs and modify it as per the requirements.
- Identify the errors in a C program.
- Identify the output of a C program without actually executing it.

REFERENCES

1. R.G.Dromey, "How to Solve it by Computer", Pearson Education, 2007.
2. H. M. Deitel and P. J. Deitel, "C How to Program", 7th Edition, Pearson Education, 2018.
3. Pradip Dey, Manas Ghosh, "Programming in C", Oxford University Press, 2007.
4. Cormen,Leiserson, Rivest, Stein, " Introduction to Algorithms", McGraw Hill Publishers, 2002.
5. Kernigan Brian W., and Dennis M. Ritchie, " The C Programming Language", Second Edition, Prentice Hall, 1988.

DATABASE MANAGEMENT SYSTEM**CREDITS:2****COURSE OBJECTIVES**

- Learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram.
- To make a study of SQL and relational database design.
- Understand the internal storage structures using different file and indexing techniques which will help in physical DB design.
- To know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.
- Gain a fundamental knowledge about the Storage and Query processing Techniques

UNIT - I RELATIONAL DATABASES

Purpose of Database System -- Views of data – Data Models – Database System Architecture –Entity–Relationship model – E-R Diagrams -- Introduction to relational databases -The relational Model –Keys - Relational Algebra – Relational Calculus – SQL fundamentals - Advanced SQL features –Embedded SQL– Dynamic SQL

UNIT- II DATABASE DESIGN

Functional Dependencies – Non-loss Decomposition – Functional Dependencies – First, Second, Third Normal Forms, Dependency Preservation – Boyce/Codd Normal Form- Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form

UNIT – III TRANSACTIONS

Transaction Concepts - Transaction Recovery – ACID Properties – System Recovery – Media Recovery – Two Phase Commit - Save Points – SQL Facilities for recovery – Concurrency – Need for Concurrency – Locking Protocols – Two Phase Locking – Deadlock- – Recovery Isolation Levels – SQL Facilities for Concurrency.

UNIT – IV IMPLEMENTATION TECHNIQUES

Overview of Physical Storage Media – Magnetic Disks – RAID – Tertiary storage – File Organization – Organization of Records in Files – Indexing and Hashing –Ordered Indices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing – Query Processing Overview – Catalog Information for Cost Estimation

UNIT – V ADVANCED TOPICS

Distributed Databases-Architecture-Transaction Processing-Data Warehousing and Mining-Classification-Association rules-Clustering-Information Retrieval- Relevance ranking-Crawling and Indexing the Web- Object Oriented Databases-XML Databases.

COURSE OUTCOMES

Upon completion of the course, the students should be able to

- Design and create tables in database and query them
- Know how transaction processing is done
- Analyze and appraise different types of databases

REFERENCES

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", Sixth Edition, Tata McGraw Hill, 2011
2. C.J.Date, A.Kannan, S.Swamynathan, "An Introduction to Database Systems", Eighth Edition, Pearson Education, 2006.
3. Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of Database Systems", Fifth Edition, Pearson, 2008.
4. Raghu Ramakrishnan, "Database Management Systems", Fourth Edition, Tata McGraw Hill, 2010.
5. G.K.Gupta, "Database Management Systems", Tata McGraw Hill, 2011.

COURSE OBJECTIVES

- To provide information about wider engineering issues that form the background to develop complex, evolving (software-intensive) systems.
- To plan a software engineering process to account for quality issues and non-functional requirements.
- To employ a selection of concepts and techniques to complete a small-scale analysis and design in mini projects.
- To impart knowledge to translate requirement specifications into a design, and then realize that design practically, all using an appropriate software engineering methodology.
- To provide basic knowledge about software project management.

UNIT – I INTRODUCTION

Software Engineering – Product and process – process models - Waterfall Life cycle model – Spiral Model – Prototype Model – fourth Generation Techniques – Agile methods.

UNIT - II REQUIREMENT ANALYSIS

Software Requirements Analysis and Specification – Software Requirements – Problem Analysis – Requirements Specification – Validation – Metrics – Summary.

UNIT - III SOFTWARE DESIGN

Abstraction – Modularity – Software Architecture – Cohesion – Coupling – Various Design Concepts and notations – Real time and Distributed System Design – Documentation – Dataflow Oriented design – Designing for reuse – Programming standards.

UNIT - III SOFTWARE TESTING

Coding – Programming Practice – Top-down and Bottom-up - structured programming – Information Hiding – Programming style – Internal Documentation Verification – Code Reading – Static Analysis – Symbolic Execution – Code Inspection or Reviews – Unit Testing – Fundamentals – Functional Testing versus structural Testing Coding.

UNIT – V SOFTWARE MAINTANANCE AND CONFIGURATION MANAGEMENT (SCM)

Need for Software maintenance – Maintenance models - SCM – Version Control – SCM process – Software Configuration Items – Taxonomy – Basics of Case tools.

UNIT – V SOFTWARE METRICS AND QUALITY ASSURANCE

Scope – Classification of metrics – Measuring Process and Product attributes – Direct and Indirect measures – Reliability – Software Quality Assurance – Standards.

COURSE OUTCOMES

Upon completion of the course, the students should be able to

- Familiar with basic concepts of Software design and implementation
- Perform software testing on various applications
- Apply various software metrics on software quality products

REFERENCES

1. Pankaj Jalote, "An Integrated Approach to Software Engineering", Third Edition, Narosa publications, 2011.
2. Ian Sommerville, "Software engineering", Ninth Edition, Pearson Education Asia, 2010.
3. Roger S. Pressman, "Software Engineering – A practitioner's Approach", Seventh Edition, Tata McGraw-Hill International Edition, 2009.

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE CREDITS:4

COURSE OBJECTIVES

To introduce mathematical logic, combinatorial and counting techniques, Algebraic structures, Finite state system and grammar as Mathematical Foundation of computer Science so as to understand algorithms, computability and other theoretical aspects of Computer science.

UNIT – I LOGIC

Statements - Connectives - Truth Tables - Normal Forms - Predicate Calculus – Inference -Theory for Statement Calculus.

UNIT – II COMBINATORICS

Permutations and Combinations - Mathematical Induction - Pigeonhole principle - Principle of Inclusion and Exclusion - Recurrence relations - Solution by generating functions and characteristics equations.

UNIT – III ALGEBRAIC STRUCTURES

Groups - Cyclic group - Permutation group (S_n and D_n) - Substructures - Homomorphism -Cosets and Lagrange's Theorem - Normal Subgroups - Rings and Fields (definition and examples).

UNIT – IV LATTICES

Partial order relation – Posets - Hasse diagram - Lattices - Special Lattices - Boolean Algebra.

UNIT – V FINITE STATE AUTOMATA AND GRAMMARS

Finite state automata - Deterministic and non-deterministic model - languages accepted by Finite State Automata - Regular expressions - Context-free grammars - Derivation trees.

COURSE OUTCOMES

Upon completion of the course, the students should be able to

- Understand mathematical logic and to develop analytical solutions for logical problems and they will be equipped with counting techniques to Solve combinatorial problems.
- Comprehend the algebraic structure and formal languages with their applications to handle abstract generalizations and computability.

REFERENCES

1. Trembley.J.P. and Manohar R., "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw – Hill Publishing Company Limited, New Delhi. Reprinted in 2007.
2. Grimaldi R.P. and Ramana B.V., "Discrete and Combinatorial Mathematics", Pearson Education, Reprinted in 2006. (5th Edition) .
3. Hopcroft J.E. and Ullman J.D., "Introduction to Automata, Languages and Computation", Narosa Publishing House, 1987.

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COURSE OBJECTIVES

- To practice the syntax of C.
- To be exposed to the file processing techniques of C.
- To be familiarized with control structures, functions, arrays and files.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Non-iterative control structures.
- Iterative control structures and arrays.
- Functions with parameters.
- Functions with arrays, structures as arguments.
- Character and String handling Libraries.
- Files – Sequential access and random access.
- Preprocessor directives for other features like macros, conditional compilation.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Design and implement C programs for any given problem.
- Understand an existing program and modify it as per the requirements.
- Identify the errors in a C program.
- Produce the output of a C program by actually executing it.

DBMS LAB**CREDITS:2****COURSE OBJECTIVES**

- To understand the concepts of DBMS practically.
- To familiarize with SQL queries
- To write stored procedures in DBMS
- To learn front end tools and to integrate them with databases

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Data Definition, Manipulation of Tables and Views
- Database Querying – Simple queries, Nested queries, Sub queries and Joins
- Triggers
- Transaction Control
- Embedded SQL
- Database Connectivity with Front End Tools
- Front End Tools / Programming Languages
- High level language extensions - PL/SQL Basics
- Procedures and Functions

- Database Design and Implementation (Case Study)

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Design and Implement databases practically
- Formulate complex queries using SQL and execute them.
- Design and Implement applications that have GUI and access databases for backend connectivity

SEMESTER – II**COMPUTER NETWORKS****CREDITS:4****COURSE OUTCOMES**

Upon Completion of the course, the students should be able to:

- Design and Implement databases practically
- Formulate complex queries using SQL and execute them.
- Design and Implement applications that have GUI and access databases for backend connectivity

UNIT – I INTRODUCTION

Building a network – Requirements – Network Architecture – OSI – Internet – Direct Link Networks – Hardware building blocks – Framing – Error detection – Reliable transmission.

UNIT – II NETWORK FUNDAMENTALS

LAN Technology – LAN Architecture – BUS/Tree – Ring – Star – Ethernet – Token Rings – Wireless.

UNIT – III NETWORK LAYER

Packet Switching – Switching and Forwarding – Bridges and LAN switches – Internetworking – Simple Internetworking – Routing.

UNIT – IV TRANSPORT LAYER

Reliable Byte Stream (TCP) – Simple Demultiplexer (UDP) – TCP Congestion Control – Congestion Avoidance Mechanisms.

UNIT – V PRESENTATION LAYER and APPLICATIONS

Presentation formatting – Data compression – Cryptographic Algorithms: RSA - DES — Applications – Domain Name Service – Email - SMTP – MIME – HTTP – SNMP.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Trace the flow of information from one node to another node in the network
- Identify the component required to build different types of networks
- Understand the division of network functionalities into layers.
- Identify solution for each functionality at each layer
- Choose the required functionality at each layer for given application

TEXT BOOK

1. Larry L. Peterson & Bruce S. Davie, “Computer Networks - A systems Approach”, 2nd Edition, Harcourt Asia/Morgan Kaufmann, 2000.

REFERENCES

1. James F. Kurose and Keith W. Ross, "Computer Networking - A Top Down Approach featuring the Internet", 1st Edition, Addison Wesley Publishing Company, 2001.
2. William Stallings, "Data and Computer Communications", 5th Edition, PHI, 1997.
3. Andrew S. Tanenbaum, "Computer Networks", Tata Mcgraw Hill, 3rd Edition, 2001.

COURSE OBJECTIVES

- To understand the OO paradigm.
- To be aware of the OO design technique.
- To learn the syntax of C++.
- To be exposed to the file processing and exception handling techniques of C++.
- To be familiarized with the Standard Template Library.

UNIT – I FUNDAMENTALS

Object–Oriented Programming concepts – Encapsulation – Programming Elements – Program Structure – Enumeration Types — Functions and Pointers – Function Invocation – Overloading Functions – Scope and Storage Class – Pointer Types – Arrays and Pointers – Call–by–Reference – Assertions – Standard template library.

UNIT – II IMPLEMENTING ADTS AND ENCAPSULATION

Aggregate Type struct – Structure Pointer Operators – Unions – Bit Fields – Data Handling and Member Functions – Classes – Constructors and Destructors – Static Member – this Pointer – reference semantics – implementation of simple ADTs.

UNIT – III POLYMORPHISM

ADT Conversions – Overloading – Overloading Operators – Unary Operator Overloading – Binary Operator Overloading – Function Selection – Pointer Operators – Visitation – Iterators – containers – List – List Iterators.

UNIT – IV TEMPLATES

Template Class – Function Templates – Class Templates – Parameterizing – STL – Algorithms – Function Adaptors.

UNIT – V INHERITANCE

Derived Class – Typing Conversions and Visibility – Code Reuse – Virtual Functions – Templates and Inheritance – Run–Time Type Identifications – Exceptions – Handlers – Standard Exceptions.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Design and implement C++ programs for any given problem.
- Understand an existing program and modify it as per the requirements.
- Identify the errors in a C++ program.
- Identify the output of a C++ program without actually executing it.
- Write generic programs using STL.

REFERENCES

1. Ira Pohl, "Object-Oriented Programming Using C++", Pearson Education, Second Edition, 2003.
2. Stanley B.Lippman, Josee Lajoie, "C++ Primer", Pearson Education, Third Edition, 2004.
3. Kamthane," Object Oriented Programming with ANSI and Turbo C++", Person Education, 2002.
4. Bhave , " Object Oriented Programming With C++", Pearson Education , 2004.

COURSE OBJECTIVES

- To gain comprehensive introduction of common data structures, and algorithm design and analysis.
- To master the design of tree, sets and graph structures and its applications.
- To learn about sorting techniques and understand how common computational problems can be solved efficiently on a computer

UNIT - I BASIC DATA STRUCTURES

From Problems to programs - Abstract Data Types - Data Types, Data Structures, and Abstract Data Types - The Running Time of a program - Calculating the Running Time of a program - Good Programming Practice; **Basic Data Types:** The Data Type “List” - Implementation of Lists – Stacks – Queues – Mappings - Stacks and Recursive Procedures

UNIT - II TREES & SETS

Trees: Basic Terminology - The ADT Tree - Implementation of Trees - Binary Trees; **Basic operations on sets:** Introduction to Sets - An ADT with Union, Intersection, and Difference - A Bit-Vector Implementation of Sets; **Advanced Set Representation Methods:** Binary Search Trees - Time Analysis of Binary Search Tree operations – Tries - Balanced Tree Implementations

UNIT - III GRAPHS

Directed Graphs: Basic Definitions - Representations of Directed Graphs - The Single-Source Shortest Paths Problem - The All-Pairs Shortest Path Problem - Traversals of Directed Graphs - Directed Acyclic Graphs - Strong Components; **Undirected Graphs:** Definitions - Minimum-Cost Spanning Trees – Traversals - Articulation Points and Biconnected Components - Graph Matching

UNIT - IV SORTING & ALGORITHM ANALYSIS

Sorting: The Internal Sorting Model - Some Simple Sorting Schemes - Quick Sort - Heap Sort - Bin Sorting - A Lower Bound for Sorting by Comparisons - Order Statistics; **Algorithm Analysis Techniques:** Efficiency of Algorithms - Analysis of Recursive programs - Solving Recurrence Equations - A General Solution for a Large Class of recurrences

UNIT - V ALGORITHM DESIGN TECHNIQUES

Algorithm Design Techniques: Divide-and-Conquer Algorithms - Dynamic Programming - Greedy Algorithms – Backtracking - Local Search Algorithms

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Describe, explain, and use abstract data types including stacks, queues and lists.
- Design and Implement Tree data structures and Sets.
- Design algorithms using graph structure to solve real-life problems
- Implement a variety of algorithms for sorting, including insertion sort, selection sort, merge sort, quick sort, and heap sort.
- Describe the asymptotic performance and algorithm design techniques studied in this course and understand the practical implications of that information.

REFERENCES

1. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, "Data Structures and Algorithms", Pearson Education, Reprint 2006.
2. Robert Sedgewick and Kevin Wayne, "Algorithms", Fourth Edition, Pearson Education, 2011.
3. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, "Introduction to Algorithms", Third Edition, PHI Learning pvt.Limited, 2012.
4. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C++", 2nd edition, Pearson Education, 2005.

COURSE OBJECTIVES

- To learn the Operating System basics.
- To study the process management of Operating system.
- To gain knowledge in the storage management and I/O systems of Operating system

UNIT - I OPERATING SYSTEMS OVERVIEW

Operating system – Types of Computer Systems - Computer-system operation – I/O structure – Hardware Protection - System components – System calls – System programs – System structure - Process concept – Process scheduling – Operations on processes – Cooperating processes – Interprocess communication – Communication in client-server systems - Multithreading models – Threading issues.

UNIT - II PROCESS MANAGEMENT

Scheduling criteria – Scheduling algorithms – Multiple-processor scheduling – Real time scheduling – Algorithm Evaluation – Process Scheduling Models - The critical-section problem – Synchronization hardware – Semaphores – Classic problems of synchronization – critical regions – Monitors - System model – Deadlock characterization – Methods for handling deadlocks – Recovery from deadlock

UNIT - III STORAGE MANAGEMENT

Memory Management – Swapping – Contiguous memory allocation – Paging – Segmentation – Segmentation with paging. Virtual Memory: Background – Demand paging – Process creation – Page replacement – Allocation of frames – Thrashing.

UNIT - IV I/O SYSTEMS

File concept – Access methods – Directory structure – File-system mounting – Protection - Directory implementation – Allocation methods – Free-space management - Disk scheduling – Disk management – Swap-space management.

UNIT – V CASE STUDY

The Linux System - History – Design Principles – Kernel Modules – Process Management – Scheduling – Memory management – File systems – Input and Output – Inter-process Communication – Network Structure – Security – Windows 7 - History – Design Principles – System Components – Environmental subsystems – File system – Networking.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Ability to discuss on the basics of OS.
- In depth knowledge in process management, memory management and I/O management of various operating systems.

- To explore the case studies with various operating systems.

REFERENCES

1. Abraham Silberschatz, Peter B. Galvin and Greg Gagne, "Operating System Concepts", Ninth Edition, John Wiley and Sons Inc 2012.
2. Andrew S. Tanenbaum, "Modern Operating Systems", Second Edition, Addison Wesley, 2001.
3. Gary Nutt, "Operating Systems", Second Edition, Addison Wesley, 2001.
4. H M Deital, P J Deital and D R Choffnes, "Operating Systems" , Pearson Education, 2004.

SOFTWARE PROJECT MANAGEMENT**CREDITS:2****COURSE OBJECTIVES**

- To understand the cost evaluation techniques.
- To learn the concepts of project planning and monitoring.
- To understand the concepts of organizing teams for software projects.

UNIT – I INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT

Project Definition – Contract Management – Activities Covered By Software Project Management – Overview Of Project Planning – Stepwise Project Planning.

UNIT – II PROJECT EVALUATION

Strategic Assessment – Technical Assessment – Cost Benefit Analysis – Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

UNIT – III ACTIVITY PLANNING

Objectives – Project Schedule – Sequencing And Scheduling Activities – Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity On Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning And Control.

UNIT – IV MONITORING AND CONTROL

Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Prioritizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

UNIT – V MANAGING PEOPLE AND ORGANIZING TEAMS

Introduction – Understanding Behavior – Organizational Behaviour: A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Oldham – Hackman Job Characteristics Model – Working In Groups – Becoming A Team – Decision Making – Leadership – Organizational Structures – Stress – Health And Safety – Case Studies.

COURSE OUTCOMES

- To perform planning and scheduling activities.
- Ability to draw activity network.
- Ability to manage people and project.

REFERENCES

1. Bob Hughes and MikeCotterell “Software Project Management”, Third Edition, TATA McGraw Hill Edition 2004.

2. Ramesh, Gopaldaswamy: "Managing Global Projects ", Tata McGraw Hill, 2001.
3. Royce." Software Project Theory", Pearson Education, 1999.
4. P.Jalote "Software Project Management In Practice", Pearson Education, 2000.

COURSE OBJECTIVES

- To implement the OO design technique.
- To learn the syntax of C++ and features of C++.
- To be exposed to the file processing and exception handling techniques of C++.
- To be familiarized with the Standard Template Library.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Write a C++ Program to illustrate Enumeration and Function Overloading
- Write a C++ Program to illustrate Scope and Storage class
- Implementation of ADT such as Stack and Queues
- Write a C++ Program to illustrate the use of Constructors and Destructors and Constructor Overloading
- Write a Program to illustrate Static member and methods
- Write a Program to illustrate Bit fields
- Write a Program to overload as binary operator, friend and member function
- Write a Program to overload unary operator in Postfix and Prefix form as member and friend function
- Write a Program to illustrate Iterators and Containers
- Write a C++ Program to illustrate function templates
- Write a C++ Program to illustrate template class
- Write C++ Programs and incorporating various forms of Inheritance
- Write a C++ Program to illustrate Virtual functions
- Exception Handling

COURSE OUTCOMES

- Ability to write C++ programs
- Implement the Stack & queue structures using C++
- Ability to create Class Template files

COURSE OBJECTIVES

- To develop skills in design and implementation of data structures and their applications.
- To learn and implement linear, non linear and tree data structures
- To learn Set ADT and Graph data structures and its applications
- To study, implement and analyze of different sorting techniques.

EXPERIMENTS IN THE FOLLOWING TOPICS:

- Abstract Data type Implementation of List, Stack and Queues.
- Tree ADT
- Tries Implementation
- Set ADT- Bit Vector Implementation
- Graph Representations
- Graph Traversals
- Shortest Path Implementation
- Spanning Tree Implementation
- Sorting Algorithms
- Implementation of Algorithms using Dynamic Programming, Backtracking

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Work with basic data structures that are suitable for problems to be solved efficiently.
- Implementation of linear, tree, and graph structures and its applications.
- Implementation of various sorting techniques its algorithm design and analysis.

SEMESTER – III**INFORMATION SECURITY****CREDITS:2****COURSE OBJECTIVES**

- Understand the security analysis principles
- Able to become familiar with Security Design.

UNIT – I INTRODUCTION

Information Security Concepts - Critical Characteristics of Information - Components of an Information System - The CIA Triad, Securing the Components - Balancing Security and Access - The SDLC - Moving towards a Secure SDLC process

UNIT – II SECURITY INVESTIGATION

Need for Security, Business Needs, Threats, Vulnerabilities, Attacks, Legal and Ethical issues in Security, Evolving a code of Professional Conduct for Information Security Professionals

UNIT – III SECURITY ANALYSIS

Risk Management : Identifying, Assessing, Mitigating, Transferring and Accepting Risk, Issues of Due Care and Due Diligence

UNIT – IV LOGICAL DESIGN

Blueprint for Security, Information Security Policy, Standards and Practices, ISO 27001/ISO 17799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity

UNIT – V PHYSICAL DESIGN

Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel

UNIT – VI BUSINESS CONTINUITY & DISASTER RECOVERY

The need for BC and DR Process, The BIA process, Understanding RTO and RPO as a business driven metrics, Selecting the appropriate BC and DR strategies, Testing and Maintenance of BC and DR Plans

COURSE OUTCOMES

Able to Develop

- Security Models using SDLC
- Implement Logical and Physical Security
- Perform Recovery using Disaster Recovery Techniques

REFERENCES

1. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Vikas Publishing House, New Delhi, 2010
2. Micki Krause, Harold F. Tipton, " Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2009.
3. Matt Bishop, " Computer Security Art and Science", Pearson/PHI, 2008.

COURSE OBJECTIVES

- To Understand Data mining principles and techniques and Introduce DM as a cutting edge business intelligence
- To expose the students to the concepts of Datawarehousing Architecture and Implementation
- To study the overview of developing areas – Web mining, Text mining and ethical aspects of Data mining
- To identify Business applications and Trends of Data mining

UNIT – I DATA WAREHOUSE

Data Warehousing - Operational Database Systems vs Data Warehouses - Multidimensional Data Model - Schemas for Multidimensional Databases – OLAP operations – Data Warehouse Architecture – Indexing – OLAP queries & Tools

UNIT – II DATA MINING & DATA PREPROCESSING

Introduction to KDD process – Knowledge Discovery from Databases - Need for Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation.

UNIT – III ASSOCIATION RULE MINING

Introduction - Data Mining Functionalities - Association Rule Mining - Mining Frequent Itemsets with and without Candidate Generation - Mining Various Kinds of Association Rules - Constraint-Based Association Mining.

UNIT – IV CLASSIFICATION & PREDICTION

Classification vs Prediction – Data preparation for Classification and Prediction – Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Section.

UNIT – V CLUSTERING

Cluster Analysis: - Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods – Clustering High-Dimensional Data – Constraint-Based Cluster Analysis – Outlier Analysis.

COURSE OUTCOMES

Upon Completion of the course, the students will be able to

- Evolve Multidimensional Intelligent model from typical system
- Discover the knowledge imbibed in the high dimensional system

- Evaluate various mining techniques on complex data objects

REFERENCES

1. Jiawei Han and Micheline Kamber "Data Mining Concepts and Techniques" Second Edition, Elsevier, Reprinted 2011.
2. K.P. Soman, Shyam Diwakar and V. Ajay "Insight into Data mining Theory and Practice", Easter Economy Edition, Prentice Hall of India, 2006.
3. G. K. Gupta "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.
4. Pang-Ning Tan, Michael Steinbach and Vipin Kumar "Introduction to Data Mining", Pearson Education, 2007.

COURSE OBJECTIVES

- To understand the basics of HTML.
- To learn the concepts of XML related technologies.
- To learn the fundamentals of java.
- To understand the importance of server side programming and web development.

UNIT – I HTML AND JAVA SCRIPT

World Wide Web – XHTML - Cascading Style Sheet - JavaScript – java script objects - Date – Array – pattern matching using regular expressions – Dynamic documents with java script – HTML 5 – new features

UNIT – II XML TECHNOLOGIES

XML – validating XML - DTD – XML schema – XPath – XLink – parsing XML using DOM – parsing XML using SAX – transforming XML with XSL – Integrating XML with database – AJAX – RSS – JSON

UNIT – III JAVA BASICS

Overview of Java – Java Fundamentals – Classes, Objects and Methods – Arrays and Array Lists – String – String Builder – Regular expressions – class pattern – class matcher - Packages and Interfaces – Exception Handling.

UNIT – IV JAVA GUI AND DATABASE CONNECTIVITY

Generic classes – Generic methods – Applets – Applet life cycle methods – Applets based GUI – GUI components – Basic of Swings – Accessing database with JDBC - basics

UNIT – V SERVER SIDE SCRIPT

Overview of servlets – Servlet API – servlet life cycle – servlet configuration – running servlet with database connectivity - servlet support for cookies – Session tracking – Java server pages – JSP Case study/ Applications – Developing Dynamic, Data driven web sites.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Design and implementation of web forms and client side validation.
- XML authoring, Parsing, and related technologies.
- Object oriented concept programming using Java.
- Design and development of GUI based applications using Swing components.
- Design and development of servlet and JSP application with database connectivity.

REFERENCES

1. Robert W. Sebesta, "Programming with World Wide Web", Pearson Education, 2008.
2. Paul Deitel and Harvey Daitel, "Java – How to program", Ninth Edition, PHI, 2012.
3. Kogent Solutions, "Java 6 Programming Black book", Dreamtech Press, 2007

COURSE OBJECTIVES

- To understand the basics of object oriented analysis and design
- To learn UML models and tools
- To apply design patterns to various applications.

UNIT – I INTRODUCTION

An overview – Object basics – Object state and properties – Behavior – Methods – Messages – Information hiding – Class hierarchy – Relationships – Associations – Aggregations- Identity – Dynamic binding – Persistence – Metaclasses – Object oriented system development life cycle.

UNIT – II METHODOLOGY AND UML

Introduction – Survey – Rumbugh, Booch, Jacobson methods – Patterns – Frameworks – Unified approach – Unified modeling language – Static and Dynamic models – UML diagrams – Class diagram – Usecase diagrams – Dynamic modeling – Model organization – Extensibility.

UNIT – III OBJECT ORIENTED ANALYSIS

Identifying Usecase – Business object analysis – Usecase driven object oriented analysis – Usecase model – Documentation – Classification – Identifying object, relationships, attributes, methods – Super-sub class – A part of relationships Identifying attributes and methods – Object responsibility

UNIT – IV OBJECT ORIENTED DESIGN

Design process – Axioms – Colollaries – Designing classes – Class visibility – Refining attributes – Methods and protocols – Object storage and object interoperability – Databases – Object relational systems – Designing interface objects – Macro and Micro level processes – The purpose of a view layer interface

UNIT – V SOFTWARE QUALITY

Quality assurance – Testing strategies – Object orientation testing – Test cases – Test Plan – Debugging principles – Usability – Satisfaction – Usability testing – Satisfaction testing

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Familiarize with the topics of object oriented System designs
- Design patterns using UML
- Apply design patterns to various applications

TEXT BOOKS

1. Ali Bahrami, "Object Oriented System Development", McGraw Hill International Edition, 1999.

REFERENCES

1. Craig Larman, Applying UML and Patterns, 2nd Edition, Pearson, 2002.
2. Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language User Guide", Addison Wesley Long man, 1999.
3. Bernd Bruegge, Allen H. Dutoit, Object Oriented Software Engineering using UML, Patterns and Java, Pearson 2004

COURSE OBJECTIVES

- To learn web page creation.
- To understand the real time requirements of web page such as validation, use of DOM, role of XML.
- To understand OOP concepts and basics of Java language.
- To learn and use client server architecture based applications.
- To explore server side functionalities of an application.

EXPERIMENTS: (Open source software are to be used)

- Creation of web pages having dynamic contents and validation using java script
- Creation of XML file and validation using XML schema and generation of XML using tools
- Simple xml based applications using DOM, SAX and XSL
- Basic Java programming covering objects, inheritance, polymorphism, interfaces, packages and exception handling
- String handling programs and regular expression programs
- Creation of applet based GUI's
- Application involving applet based GUI, JDBC, Servlet, JSP, cookies and session tracking.

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Make Web site creation and validation.
- Work with XML based technologies.
- Develop simple console application using Java.
- Develop GUI application using Swing and Applet.
- Build web based applications using JDBC, Servlet / JSP.

DCS7312 SOFTWARE DEVELOPMENT LAB**CREDITS:2****COURSE OBJECTIVES**

- Understand project planning
- Able to Analysis and Design Application
- Able to Implement and Test Software

Apply the following to typical application problems:

1. Project Planning
2. Software Requirement Analysis
3. Software Estimation

4. Software Design
5. Data Modelling & Implementation
6. Software Testing
7. Software Debugging

A possible set of applications may be the following:

- a. Library System
- b. Student Marks Analyzing System
- c. Text Editor.
- d. Create a dictionary.
- e. Telephone dictionary.
- f. Simulator Software for Parallel Processing Operation.
- g. Inventory System.

COURSE OUTCOMES

- Able to Draw DFD and UML Diagrams
- Able to Write programs for Design
- Generate and Execute Test cases

ELECTIVES**ELECTIVE I****MOBILE COMPUTING****CREDITS:2****COURSE OBJECTIVES**

Able

- To understand the principles of wireless communication
- To understand wireless LAN protocols
- To become familiar with mobile Routing protocols

UNIT – I WIRELESS COMMUNICATION

Challenges of Wireless Transmission - Multi-carrier modulation - Spread Spectrum - Satellite Communication - Broadcast systems - Multiplexing - FDMA, TDMA and CDMA - Cellular organization of mobile telephone networks - Operation of cellular networks - Frequency Reuse - Tessellation - Handoff - Capacity Improvement

UNIT – II WIRELESS NETWORKS

IEEE 802.11 Wireless LAN - Architecture - Modes of Operation - CSMA/CA and its variants - Wireless LAN security - Bluetooth networks - Generation of cellular networks - Overview of GSM - GPRS Network Architecture and Operations - UMTS and IMT 2000 - Packet Switching Domain - Core Network - Radio Access Network - LTE - Control Plane - User Plane

UNIT – III L3 AND L4 WIRELESS PROTOCOLS

Mobile IP - Mobility features in IPv6 - Proactive and reactive ad hoc routing protocols - DSDV, DSR and AODV - Limitations of Traditional TCP in wireless networks - TCP improvements for Wireless Networks – Indirect TCP, Snoop TCP, Mobile TCP - Security issues in network layer and transport layer

UNIT – IV MOBILE COMPUTING PLATFORM

PDA - Device characteristics and Software components - Smart Phone - Convergence of Mobile devices - J2ME - Modes, Data store, GUI support - HTTP Connection Interface Push Registry - Application development using Android APIs - Palm OS Architecture and Program Development - Overview of other mobile Operating Systems

UNIT – V MOBILE INTERNET

WAP - WAP Gateways - WML - VoiceXML - Mobile Messaging - Multimedia Messaging Service - Synchronized Multimedia Integration Language - Application Servers - Internet portals - Device management - Synchronization Models - Communication to Servlets and Web Services - Location aware Mobile computing - IP Multimedia Subsystem

COURSE OUTCOMES

Able to Develop Mobile Application

- Implement MAC protocols
- Able to perform Optimal Routing

TEXT BOOKS

1. Asoke Talukder, Hasan Ahmed, Rupa Yavagal, "Mobile Computing: Technology, Applications and Services Creation", Second Edition, TMH, 2010.
2. William Stallings, "Wireless Communication and Networks", Pearson, 2009.

REFERENCES

1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson, 2009.
2. Uwe Hansmann et al, "Principles of Mobile Computing", Springer, 2003.
3. Ivan Stojmenovic, "Handbook of Wireless Networks and Mobile Computing", Wiley, 2002.

COURSE OBJECTIVES

- Able to understand XML Data Representation
- Create Web Services
- Develop Security Mechanisms for XML Data.

UNIT – I XML FUNDAMENTALS

XML – structuring with schema DTD – XML Schema – XML Processing DOM – SAX – Presental XSL – Transformation XSLT – XPath –XQuery

UNIT – II DISTRIBUTED INFORMATION SYSTEM

Distributed information system – Design of IB – Architecture of IB – Communication in an IS – Middleware RPC – TP monitors – Object brokers – Message oriented middleware – EAI – EAI Middleware – Workflow –Management – benefits and limitations – Web technologies for Application Integration.

UNIT – III WEB SERVICES

Web Services – Definition – Web Services and EAI – Web Services Technologies – web services Architecture – SOAP – WSDL – UDDI –WS – Addressing – WS – Routing WS-Security –WS –Policy –Web Service invocation framework web services using java – WS using .NET mobile web service.

UNIT – IV XML SECURITY

XML Security and meta framework_XML signature – XML Encryption – SAML – XKMS – WS – Security – RDF – semantic Web service.

UNIT – V SERVICE COMPOSITION

Service Coordination and Composition coordination protocols – WS – Coordination – WS – transaction – RosttaNet – ebXML –WSCI – Service Composition – Service Composition Models – Dependencies between coordination and composition – BPEL – Current trends.

COURSE OUTCOMES

- Able to Design Web Databases
- To compose and Deploy Web Services
- Implement Security principles

REFERENCES

1. Gystavo Alonso, Fabio casasi, Hareemi kuno, vijay machiraju, “web Services – concepts, Architecture and Applications”, Springer, 2004.
2. Ron Schmelzer etal “ XML and Web Services”, Pearson Education, 2002.
3. Sandeep chatterjee and james webber,” Developing
4. Enterprise web services: An Architect’s and Guide”, Practice Hall, 2004.

5. Freunk p.coyle," XML, web Services and the Data Revolution", Pearson, 2002.

COURSE OBJECTIVES

Able to

- Understand the equivalence of NFA, DFA and Regular Expression
- Write Grammar for a Language
- Develop a PDA

UNIT – I REGULAR EXPRESSIONS AND LANGUAGES

Introduction to Formal Proof – Additional Forms of proof – Inductive proofs – Regular Expressions – Regular and Non Regular Languages - Closure Properties of Regular Languages - Proving Languages Not to Be Regular - Decision Properties of Regular Languages

UNIT – II AUTOMATA

Finite Automata – Deterministic Finite Automata – Non-deterministic Finite Automata – Finite Automata with Epsilon Transitions - Kleene's Theorem –Equivalence and Minimization of Automata - Finite Automata and Regular Expressions

UNIT – III CONTEXT-FREE GRAMMARS AND LANGUAGES

Context-Free Grammars – Parse Trees – Ambiguity in Grammars and Languages – Phases of a compiler - Lexical Analysis – Parsing – Compiler Design using Lexical Analysis and Parsing – Grammars for Natural Language Processing

UNIT – IV PUSHDOWN AUTOMATA AND TURING MACHINES

Definition– Languages of a Pushdown Automata – Equivalence of Pushdown Automata and Context-Free Grammars - Deterministic Pushdown Automata, Normal forms for Context-Free Grammars – Pumping Lemma for Context-Free Languages - Closure and Decision Properties of Context-Free Languages - Turing Machines – Programming Techniques for Turing Machines - Basic Turing Machine Extensions

UNIT – V UNDECIDABILITY

Not Recursively Enumerable Language – Recursively Enumerable Undecidable problem– Undecidable Problems about Turing Machines – Post's Correspondence Problem - The classes P and NP - NP-complete problems

COURSE OUTCOMES

- Able to write programs for Logical Analysis
- Write programs to Syntax Analysis
- Implement stack operations for PDA

TEXT BOOKS

1. J.E.Hopcroft, R.Motwani and J.D Ullman, "Introduction to Automata Theory, Languages and Computations", Second Edition, Pearson Education, 2009
2. J.Martin, "Introduction to Languages and the Theory of Computation", Third edition, TMH, 2008.

REFERENCES

1. H.R.Lewis and C.H.Papadimitriou, "Elements of The theory of Computation", Second Edition, Pearson Education/PHI, 2007.
2. Micheal Sipser, "Introduction of the Theory and Computation", Thomson Brokecole, 2003.
3. Alfred V. Aho, Monica S. Lam, Ravi Sethi, and Jeffrey D. Ullman, "Compilers: Principles, Techniques, & Tools", Second Edition Boston: Addison-Wesley, 2007

ELECTIVE II**COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS CREDITS:2****COURSE OBJECTIVES**

- To understand the basic concepts of graphics designs.
- To familiarize the student with the transformation and projection techniques
- To expose the student to various color models.

UNIT – I INTRODUCTION

Overview of Graphics System - Bresenham technique – Line Drawing and Circle Drawing Algorithms - DDA - Line Clipping - Text Clipping.

UNIT – II 2D TRANSFORMATIONS

Two dimensional transformations – Scaling and Rotations - Interactive Input methods - Polygons - Splines – Bezier Curves - Window view port mapping transformation.

UNIT – III 3D TRANSFORMATIONS

3D Concepts - Projections – Parallel Projection - Perspective Projection – Visible Surface Detection Methods - Visualization and polygon rendering – Color models – XYZ- RGB-YIQ-CMY-HSV Models - animation – Key Frame systems - General animation functions - morphing.

UNIT – IV OVERVIEW OF MULTIMEDIA

Multimedia hardware & software - Components of multimedia – Text, Image – Graphics – Audio – Video – Animation – Authoring.

UNIT – V MULTIMEDIA SYSTEMS AND APPLICATIONS

Multimedia communication systems – Data base systems – Synchronization Issues – Presentation requirements – Applications – Video conferencing – Virtual reality – Interactive video – video on demand

COURSE OUTCOMES

Upon Completion of the course, the students should be able to

- Implement basic graphics transformation and projection techniques.
- Design an application that incorporates different concepts of various color models.
- Apply and explore new techniques in the areas of compression techniques.
- To appreciate the use of multimedia authoring tools and multimedia compression techniques

TEXT BOOKS

1. Hearn D and Baker M.P, “Computer graphics – C Version”, 2nd Edition, Pearson

- Education, 2004 (unit 1, 2 &3).
2. Ralf Steinmetz, Klara Steinmetz, "Multimedia Computing, Communications and Applications", Pearson Education, 2004 (unit 4 & 5).

REFERENCES

1. Simon J. Gibbs and Dionysios C. Tsihritzis, "Multimedia programming", Addison Wesley, 1995.
2. John Villamil, Casanova and Leony Fernandez, Eliar, "Multimedia Graphics", PHI, 1998.

COURSE OBJECTIVES

- To understand the hacking techniques of computer forensics.
- To learn about data recovery methods.
- To identify the threats in computer forensics

UNIT – I ETHICAL HACKING

Foundation for Ethical Hacking-Ethical Hacking in Motion-Hacking Network Hosts-Hacking Operating Systems-Hacking Applications.

UNIT – II TYPES OF COMPUTER FORENSICS

Computer Forensics Fundamentals – Types of Computer Forensics Technology – Types of Vendor and Computer Forensics Services.

UNIT – II DATA RECOVERY

Data Recovery – Evidence Collection and Data Seizure – Duplication and Preservation of Digital Evidence – Computer Image Verification and Authentication.

UNIT – III ELECTRONIC EVIDENCE

Discover of Electronic Evidence – Identification of Data – Reconstructing Past Events – Networks.

UNIT – IV THREATS

Fighting against Macro Threats – Information Warfare Arsenal – Tactics of the Military – Tactics of Terrorist and Rogues – Tactics of Private Companies.

COURSE OUTCOMES

- Able to distinguish between hackers and normal users.
- To apply the principles of computer forensics for security.
- To implement the data recovery methods.
- To manage threats and the tactics.

TEXT BOOKS

1. John R. Vacca, "Computer Forensics", Firewall Media, 2004.
2. Kevin Beaver, "Hacking For Dummies", John Wiley & Sons, 2012.

REFERENCES

1. Chad Steel, "Windows Forensics", Wiley India, 2006.
2. Majid Yar, "Cybercrime and Society", Sage Publications, 2006.
3. Robert M Slade, "Software Forensics", Tata McGrawHill, 2004.

SOFTWARE TESTING**CREDITS:2****COURSE OBJECTIVES**

- To introduce the basics and necessity of Software testing
- To introduce various testing techniques along with software production
- To introduce the concepts of Software bugs and its impact

UNIT - I INTRODUCTION

Software Testing background – software bugs- cost of bugs-software testing realities- Testing Axioms – Precision and Accuracy-verification and validation- quality and reliability-testing and quality assurance.

UNIT - II SOFTWARE TESTING METHODOLOGY

Functional testing- Structural testing – Static and Dynamic testing – low level specification test techniques – Equivalence Partitioning – Data testing – State Testing – formal reviews – coding standards and guidelines – code review checklist – data coverage- code coverage.

UNIT - III SOFTWARE TESTING TECHNIQUES

Configuration testing – Compatibility testing – foreign language testing – usability testing – testing the documentation - testing for software security – website testing

UNIT - IV AUTOMATED TESTING AND TEST TOOLS

Benefits of automation and tools – viewers and monitors – drivers – stubs – stress and load tools – analysis tools- software test automation – random testing – beta testing

UNIT - V TEST DOCUMENTATION

Goal of Test Planning – test phases – test strategy – resource requirements – test schedule – writing and tracking test cases- Bug tracking systems – metrics and statistics- risks and issues

COURSE OUTCOMES

Upon Completion of the course, the students should be able to:

- Perform automated testing using test tools
- Document the testing procedures

REFERENCES

1. Glenford J.Myers, Tom Badgett, Corey Sandler, “The Art of Software Testing”,3rd edition, John Wiley & Sons publication, 2012.
2. Ron Patton, “Software testing” , second edition, Pearson education, 2009.
3. Boris Beizer, “Software testing techniques”,DreamTech Press,2009.

4. Srinivasan Desikan, Gopaldaswamy Ramesh, "Software testing- Principles and Practices", Pearson education, 2009.

ELECTIVE III**CLOUD COMPUTING****CREDITS:2****COURSE OBJECTIVES**

Understand

- Cloud Services and Application
- Become familiar with MAP REDUCE Techniques
- Know about Cloud Tools and Programming

UNIT – I INTRODUCTION

Evolution of Cloud Computing –System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture -IaaS – On-demand provisioning – Elasticity in cloud – Egs of IaaS providers - PaaS – Egs. Of PaaS providers - SaaS – Egs. Of SaaS providers – Public , Private and Hybrid clouds.

UNIT – II VIRTUALIZATION

Basics of virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Desktop virtualization – Server Virtualization.

UNIT – III CLOUD INFRASTRUCTURE

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

UNIT – IV PROGRAMMING MODEL

Parallel and Distributed programming Paradigms – MapReduce , Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments - Eucalyptus, Open nebula, OpenStack.

UNIT – V SECURITY IN THE CLOUD

Security Overview – Cloud Security Challenges – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security.

COURSE OUTCOMES

Able to

- Implement Virtualization Techniques
- Store and Retrieve Data in Cloud
- Provide Security through programs.

TEXT BOOKS

1. Distributed and Cloud Computing, From Parallel Processing to the Internet of Things by Kai Hwang, Geoffrey C Fox, Jack G Dongarra, Morgan Kaufmann Publishers, 2012.
2. Cloud Computing: Implementation, Management, and Security by John W.Rittinghouse and James F.Ransome : CRC Press 2010

REFERENCES

1. Cloud Computing, A Practical Approach by Toby Velte, Anthony Velte, Robert Elsenpeter: TMH, 2018
2. Cloud Application Architectures: Building Applications and Infrastructure in the Cloud: Transactional Systems for EC2 and Beyond (Theory in Practice (O'Reilly)) by George Reese: O'Reilly
3. James E. Smith, Ravi Nair, Virtual Machines: Versatile Platforms for Systems and Processes, Elsevier/Morgan Kaufmann, 2005.
4. Katarina Stanoevska-Slabeva, Thomas Wozniak, Santi Ristol, "Grid and Cloud Computing – A Business Perspective on Technology and Applications", Springer.

COURSE OBJECTIVES

Able to

- Understand windows Environment
- Write programs in Visual Basic
- Understand the concepts of VC++

UNIT – I WINDOWS PROGRAMMING

The windows programming Model – Event driven programming – GUI concepts – Overview of Windows programming – Creating and displaying the window – Message Loop – windows procedure – WM_PAINT message – WM_DESTROY message – Data types – Resources – An Introduction to GDI – Device context – Text output – Scroll Bars – Keyboard – Mouse – Menus.

UNIT – II VISUAL BASIC PROGRAMMING

Visual Basic Applications – Form and properties – Variables and Constants – Variant type – Procedure scope – Main – Control statements – control arrays – Creating and using Controls – Menus and Dialogs – Programming fundamentals – Objects and instances – Debugging – Responding to mouse events – Drag and Drag drop events Responding to keyboard events – keypress, keyup, keydown events – Using grid control – Graphics controls – shape and line control – File system controls – Common dialog controls – Processing files – Accessing databases with the data controls.

UNIT – III VISUAL C++ PROGRAMMING

Visual C++ components – Introduction to Microsoft Foundation Classes Library – Getting started with AppWizard – Class Wizard – Event handling – Keyboard and Mouse events - WM_SIZE, WM_CHAR messages - Graphics Device Interface - Pen, Brush, Colors, Fonts - Single and Multiple document interface - Reading and Writing documents - Resources – Bitmaps creation, usage of BMP and displaying a file existing as a BMP.

UNIT – IV CONTROLS

Dialog Based Applications, controls – Animate control, image list, CRect tracker – Tree control – CtabControl – Dynamic controls – slider control – progress control – Inheriting CTreeView – CRicheditView – Modal Dialog, – Modeless Dialog – CColorDialog – CFileDialog.

UNIT – V ADVANCED CONCEPTS

Domain Name System – Email – World Wide Web (HTTP) – Simple Status bars – Splitter windows and multiple views – Dynamic Link Library – Data base Management with ODBC – TCP/IP – Winsock and WinInet, – ActiveX control – creation and usage – Container class.

COURSE OUTCOMES

Able to

- Develop windows Applications
- User Interface Design using VB
- Application Development using VC++

TEXT BOOKS

1. Charles Petzold, "Windows Programming", Microsoft press, 1996.
2. J. David Kruglirski, "Programming Microsoft Visual C++", Fifth Edition, Microsoft press, 1998.
3. Marion Cottingham "Visual Basic", Peachpit Press, 1999.

REFERENCES

1. Steve Holzner, "Visual C++ 6 programming", Wiley Dreamtech India Private Ltd., 2003.
2. Kate Gregory "Using Visual C++", Prentice Hall of India Pvt., Ltd., 1999.
3. Herbert Sheildt, "MFC from the Ground Up".
4. Deitel , " Visual Basic 6.0 How To Program", Pearson Education, 1999.

COURSE OBJECTIVES

Able to Understand

- the TCP/IP networks
- Electronic payment systems
- E-Security principles

UNIT - I

Introduction: Infrastructure for Electronic Commerce - Networks - Packet Switched Networks - TCP/IP Internet protocol - Domain name Services - Web Service Protocols - Internet applications - Utility programs - Markup Languages - Web Clients and Servers - Intranets and Extranets - Virtual private Network.

UNIT - II

Core Technology: Electronic Commerce Models - Shopping Cart Technology - Data Mining - Intelligent Agents – Internet Marketing - XML and E-Commerce

UNIT - III

Electronic Payment Systems: Real world Payment Systems - Electronic Funds Transfer - Digital Payment - Internet Payment Systems – Micro Payments - Credit Card Transactions – Mobile Marketing and Advertisement - Case Studies.

UNIT - IV

Security: Threats to Network Security - Public Key Cryptography - Secured Sockets Layer - Secure Electronic Transaction - Network Security Solutions - Firewalls.

UNIT - V

Inter/Intra Organizations Electronic Commerce: EDI - EDI application in business - legal, Security and Privacy issues - EDI and Electronic commerce - Standards - Internal Information Systems - Macro forces - Internal commerce - Workflow Automation and Coordination - Customization and Internal commerce - Supply chain Management.

COURSE OUTCOMES

Able to create

- XML and Web Databases
- Implement Electronic payment systems
- Implement E-Security systems

TEXT BOOK

1. Ravi Kalakota and Andrew B Whinston , Frontiers of Electronic commerce, Pearson Education, 2003

REFERENCES

1. Brian E.Mennecke, Troy J.Strader, "Mobile Commerce: (Soft Cover): Technology,Theory and Applications", Idea group Inc., IRM Press,2003
2. Pete Loshin, Paul A Murphy , Electronic Commerce, 2nd Edition , Jaico Publishers1996.
3. David Whiteley, e - Commerce : Strategy, Technologies and Applications - McGraw Hill 2000.

MBA PROGRAMME PROJECT REPORT

1. PROGRAMME MISSION AND OBJECTIVES

• MISSION STATEMENT

To be a catalyst of progressive knowledge through continuous management education thereby elevating the entrepreneurial, managerial and leadership qualities among the potential human resources.

• OBJECTIVES FOR THE PROGRAMME

- To provide alternative mode of affordable quality education in the field of management .
- To offer comprehensive state-of-the-art curriculum leading to MBA Professional Degree
- To disseminate teaching and learning process through the use of educational technology to suit the academic pursuits of educated citizens.
- To identify and offer courses in par with the industrial expectations to all qualified personnel.
- To provide the change management in Distance mode through inquiry based curriculum updating and with use of innovative E-Learning teaching aids.

• INDUSTRIAL / LEARNERS DEMAND

MBA Degree Programme is offered to train students with Professional management practices in all the functional areas that are essential for effective sustainable and holistic development of individuals and organisations. It is offered with the following wide array of specializations to help students acquire a market relevant combination of skills and knowledge:

1. MBA (General Management)
2. MBA (Technology Management)
3. MBA (Marketing Management)
4. MBA (Human Resource Management)
5. MBA (Financial Services Management)
6. MBA (Health Services Management)
7. MBA (Hospitality and Tourism Management) ; and
8. MBA (Operations Management)

2. RELEVANCE OF THE PROGRAMME WITH HEI'S MISSION AND GOALS

HEI'S GOALS

- To constantly raise the quality of engineering education thereby to produce superior human resource to match rapid technological developments
- To share its academic experience and infrastructure with other institutions for providing quality education across the State and help students to fulfill their dreams.
- To uphold the highest ethical and professional standards while imparting engineering education and while fulfilling its obligations to students and staff.
- To serve the society with technological advancement and to actively take part in building knowledge-based society.

HEI'S MISSION

Anna University shall strive towards a World Class Institution by producing professionals with high technical knowledge, professional skills and ethical values. The University shall be a preferred partner to the industry and community for contribution towards their economic and social development by providing high quality manpower through excellence in teaching, research and consultancy. Anna University shall be recognized as a point of reference, a catalyst, a facilitator, a trend setter and a leader in technical education.

PROGRAMMES OFFERED TO ACHIEVE HEI'S MISSION AND GOALS

The Centre for Distance Education was established in 2006 to impart quality technical and professional education through distance learning that would provide competitive edge for students and working population in the global business environment. The Centre aims to develop and disseminate professional education to every nook and corner of the state that will foster economic and social development in line with the mission of the university and HEI. The programmes are designed with a broader vision to enhance the ability of the future managers to operate in an increasingly diverse environment.

2. NATURE OF PROSPECTIVE TARGET GROUP OF LEARNERS

MBA Programme is designed and intended primarily to meet the needs of working professionals for enhancing their knowledge and for those who wish to broaden and deepen their understanding of the various techniques and strategies of managing organization and people. It provides flexibility to the learner to continue their studies without compromising on quality of education and course content, as they are pursuing their professional work.

COMPOSITION OF THE TARGET GROUP

This group largely include working or self employed professionals in business, corporate companies and IT and IT enabled service industry. Nevertheless, a good part of the enrolled students include fresh graduates who want to study at leisure or engaged at some other profession. It also comprises of women learners who wish to continue their education after taking a break in study due to family life cycle, thereby unleashing their potential.

3. APPROPRIATENESS OF THE PROGRAMME TO ACQUIRE SPECIFIC SKILLS AND COMPETENCE

All our programmes are designed to address the specific need based industrial requirements and impart students with specific skills like Communication skills, Negotiation skills, Selling skills, Entrepreneurial skill & Counseling skills that permit them address real life problems effectively. This skill improvement based curriculum and the unique delivery method adopted at CDE with a conscious effort to make the sessions interactive by using case studies and references of latest developments in the relevant field adds value to the programme. In addition, students are encouraged to undertake projects to sharpen their research and analytical skills that produces post graduates with exemplary competence in their field of specialization and makes them stand out from the crowd.

LEARNING OUTCOMES

In its effort towards contribution of knowledge generation and dissemination the program is expected to

- Enhance employability by upgrading their professional and managerial skills
- Nurture creativity and entrepreneurship by gaining business acumen through case studies
- educate how to communicate and negotiate effectively to achieve organizational and individual goals.
- Instill sensitivity among the students to become thought provoking leaders to face the challenges of a dynamically unstable environment.
- Sensitize them to understand ethical issues and dilemmas that businesses often face.

SPECIFIC SKILLS ACQUIRED- The students in the process of learning acquire the following skills:

Negotiation skills

Counseling skills

Selling skills

Entrepreneurial skills

Communication skills

COMPETENCIES ACQUIRED - The various competencies acquired by students include:

Personal Competencies - How to manage self

Interpersonal competencies - How to work with people in teams

Informational competencies- How to use and process information

Action competencies- How to perform a work in a systematic way

4. INSTRUCTIONAL DESIGN

Need based courses have been identified and the courses are developed. They have been fine-tuned taking into consideration industry/social requirements and also to educate rural people professionally. The course, curriculum and syllabi are designed and evaluated by a Departmental Committee and a Syllabus Subcommittee with experts both from academia and industry. The curriculum and syllabi is then placed in the Board of Studies of the faculty of Management Sciences for MBA. The finalized curriculum and syllabi are then placed in the Academic Council for the final approval. The governing body of the distance education ensures that the distance education curriculum has equivalent amount of credits as the regular programmes. In addition, electives have been introduced specifically for distance education programmes to suit the requirements of the dynamic changes taking place in the economy and Industry.

The course curriculum is completely revised periodically once every four years. However electives can be introduced as and when the need arises after obtaining necessary approvals from the appropriate academic bodies of the University. Approval of Board of Studies and Academic Council are obtained whenever modifications/additions are made in the existing curriculum and syllabi.

- CURRICULUM DESIGN

**MBA (GENERAL MANAGEMENT)
REGULATIONS - 2018 CURRICULUM
SEMESTER - I**

Course Title	Credits*	Marks
Management Concepts	2	100
Statistics for Management	4	100
Economic Analysis for Business	2	100
Organizational Behaviour	2	100
Communication Skills	2	100
Accounting for Management	4	100
Legal Aspects of Business	2	100
TOTAL	18	700

SEMESTER - II

Course Title	Credits*	Marks
Production & Operations Management	2	100
Marketing Management	4	100
Human Resource Management	2	100
Financial Management	2	100
Information Management	2	100
Quality Management	2	100
Business Research Methods	4	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Applied Operations Research	4	100
International Business Management	2	100
Strategic Management	4	100
Enterprise Resource Planning	2	100
Integrated Marketing Communications	2	100
Consumer Behaviour	2	100
Training and Development	2	100
TOTAL	18	700

SEMESTER - IV

Course Title	Credits*	Marks
Industrial Relations and Labour Welfare	2	100
Strategic Investment and Financing Decisions	2	100
Indian Banking Financial System	2	100
Supply Chain Management	2	100
Materials Management	2	100
Project Work in the relevant specialization	8	200
TOTAL	18	700
Total No. of Credits and Marks	72	2800

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

MBA (TECHNOLOGY MANAGEMENT)
REGULATIONS - 2018 CURRICULUM
SEMESTER - I

Course Title	Credits*	Marks
Management Concepts	2	100
Statistics for Management	4	100
Economic Analysis for Business	2	100
Organizational Behaviour	2	100
Communication Skills	2	100
Accounting for Management	4	100
Legal Aspects of Business	2	100
TOTAL	18	700

SEMESTER - II

Course Title	Credits*	Marks
Production & Operations Management	2	100
Marketing Management	4	100
Human Resource Management	2	100
Financial Management	2	100
Information Management	2	100
Quality Management	2	100
Business Research Methods	4	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Applied Operations Research	4	100
International Business Management	2	100
Strategic Management	4	100
Enterprise Resource Planning	2	100
Technology Forecasting and Assessment	2	100
Technology Commercialization & Transfer	2	100
Research & Development Management	2	100
TOTAL	18	700

SEMESTER - IV

Course Title	Credits*	Marks
Intellectual Property Rights	2	100
Managing Technological Innovation	2	100
E-Business Management	2	100
Software Project & Quality Management	2	100
Data Mining & Business Intelligence	2	100
Project Work in the relevant specialization	8	200
TOTAL	18	700
Total No. of Credits and Marks	72	2800

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

MBA (MARKETING MANAGEMENT)
REGULATIONS - 2018 CURRICULUM
SEMESTER - I

Course Title	Credits*	Marks
Management Concepts	2	100
Statistics for Management	4	100
Economic Analysis for Business	2	100
Organizational Behaviour	2	100
Communication Skills	2	100
Accounting for Management	4	100
Legal Aspects of Business	2	100
TOTAL	18	700

SEMESTER - II

Course Title	Credits*	Marks
Production & Operations Management	2	100
Marketing Management	4	100
Human Resource Management	2	100
Financial Management	2	100
Information Management	2	100
Quality Management	2	100
Business Research Methods	4	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Applied Operations Research	4	100
International Business Management	2	100
Strategic Management	4	100
Enterprise Resource Planning	2	100
Marketing Research	2	100
Brand Management	2	100
Retail Management	2	100
TOTAL	18	700

SEMESTER - IV

Course Title	Credits*	Marks
Services Marketing	2	100
Integrated Marketing Communications	2	100
Consumer Behaviour	2	100
Customer Relationship Management	2	100
Marketing Analytics	2	100
Project Work in the relevant specialization	8	200
TOTAL	18	700
Total No. of Credits and Marks	72	2800

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

MBA (HUMAN RESOURCE MANAGEMENT)**REGULATIONS - 2018 CURRICULUM****SEMESTER - I**

Course Title	Credits*	Marks
Management Concepts	2	100
Statistics for Management	4	100
Economic Analysis for Business	2	100
Organizational Behaviour	2	100
Communication Skills	2	100
Accounting for Management	4	100
Legal Aspects of Business	2	100
TOTAL	18	700

SEMESTER - II

Course Title	Credits*	Marks
Production & Operations Management	2	100
Marketing Management	4	100
Human Resource Management	2	100
Financial Management	2	100
Information Management	2	100
Quality Management	2	100
Business Research Methods	4	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Applied Operations Research	4	100
International Business Management	2	100
Strategic Management	4	100
Enterprise Resource Planning	2	100
Managerial Behaviour and Effectiveness	2	100
Strategic HRM & Development	2	100
Performance Management	2	100
TOTAL	18	700

SEMESTER - IV

Course Title	Credits*	Marks
Training and Development	2	100
Industrial Relations and Labour Welfare	2	100
Organizational Theory, Design and Development	2	100
Social Psychology	2	100
Stress Management	2	100
Project Work in the relevant specialization	8	200
TOTAL	18	700
Total No. of Credits and Marks	72	2800

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

MBA (FINANCIAL SERVICES MANAGEMENT)**REGULATIONS - 2018 CURRICULUM****SEMESTER - I**

Course Title	Credits*	Marks
Management Concepts	2	100
Statistics for Management	4	100
Economic Analysis for Business	2	100
Organizational Behaviour	2	100
Communication Skills	2	100
Accounting for Management	4	100
Legal Aspects of Business	2	100
TOTAL	18	700

SEMESTER - II

Course Title	Credits*	Marks
Production & Operations Management	2	100
Marketing Management	4	100
Human Resource Management	2	100
Financial Management	2	100
Information Management	2	100
Quality Management	2	100
Business Research Methods	4	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Applied Operations Research	4	100
International Business Management	2	100
Strategic Management	4	100
Enterprise Resource Planning	2	100
Indian Banking Financial System	2	100
Security Analysis and Portfolio Management	2	100
Hire Purchasing, Leasing and Venture Capital	2	100
TOTAL	18	700

SEMESTER - IV

Course Title	Credits*	Marks
Insurance & Risk Management	2	100
International Trade Finance	2	100
Financial Derivatives Management	2	100
Strategic Investment and Financing Decisions	2	100
Entrepreneurial Finance	2	100
Project Work in the relevant specialization	8	200
TOTAL	18	700
Total No. of Credits and Marks	72	2800

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

**MBA (HEALTH SERVICES MANAGEMENT)
REGULATIONS - 2018 CURRICULUM**

SEMESTER - I

Course Title	Credits*	Marks
Management Concepts	2	100
Statistics for Management	4	100
Economic Analysis for Business	2	100
Organizational Behaviour	2	100
Communication Skills	2	100
Accounting for Management	4	100
Legal Aspects of Business	2	100
TOTAL	18	700

SEMESTER - II

Course Title	Credits*	Marks
Production & Operations Management	2	100
Marketing Management	4	100
Human Resource Management	2	100
Financial Management	2	100
Information Management	2	100
Service Quality Management	2	100
Business Research Methods	4	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Applied Operations Research	4	100
International Business Management	2	100
Strategic Management	4	100
Enterprise Resource Planning	2	100
Materials Management & Logistics in health care	2	100
Management of Health Care Services	2	100
Health Insurance	2	100
TOTAL	18	700

SEMESTER - IV

Course Title	Credits*	Marks
Legal Aspects of Health Care	2	100
International Health Management	2	100
Medical Equipment Management	2	100
Medical Tourism	2	100
Medical Waste Management	2	100
Project Work in the relevant specialization	8	200
TOTAL	18	700
Total No. of Credits and Marks	72	2800

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

MBA (HOSPITALITY AND TOURISM MANAGEMENT)**REGULATIONS - 2018 CURRICULUM****SEMESTER - I**

Course Title	Credits*	Marks
Management Concepts	2	100
Statistics for Management	4	100
Economic Analysis for Business	2	100
Organizational Behaviour	2	100
Communication Skills	2	100
Accounting for Management	4	100
Legal Aspects of Business	2	100
TOTAL	18	700

SEMESTER - II

Course Title	Credits*	Marks
Production & Operations Management	2	100
Marketing Management	4	100
Human Resource Management	2	100
Financial Management	2	100
Information Management	2	100
Service Quality Management	2	100
Business Research Methods	4	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Applied Operations Research	4	100
International Business Management	2	100
Strategic Management	4	100
Enterprise Resource Planning	2	100
Culture and Ethos	2	100
Room Division Management	2	100
Tourism and Travel Management	2	100
TOTAL	18	700

SEMESTER - IV

Course Title	Credits*	Marks
Food and Beverage Management	2	100
Event Management	2	100
Facility and Security Management	2	100
Food Safety and Quality	2	100
Destination Management	2	100
Project Work in the relevant specialization	8	200
TOTAL	18	700
Total No. of Credits and Marks	72	2800

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

MBA (OPERATIONS MANAGEMENT)**REGULATIONS - 2018 CURRICULUM****SEMESTER - I**

Course Title	Credits*	Marks
Management Concepts	2	100
Statistics for Management	4	100
Economic Analysis for Business	2	100
Organizational Behaviour	2	100
Communication Skills	2	100
Accounting for Management	4	100
Legal Aspects of Business	2	100
TOTAL	18	700

SEMESTER - II

Course Title	Credits*	Marks
Production & Operations Management	2	100
Marketing Management	4	100
Human Resource Management	2	100
Financial Management	2	100
Information Management	2	100
Quality Management	2	100
Business Research Methods	4	100
TOTAL	18	700

SEMESTER - III

Course Title	Credits*	Marks
Applied Operations Research	4	100
International Business Management	2	100
Strategic Management	4	100
Enterprise Resource Planning	2	100
Supply Chain Management	2	100
Logistics Management	2	100
Product Design & Development	2	100
TOTAL	18	700

SEMESTER - IV

Course Title	Credits*	Marks
Project Management	2	100
Robust Design	2	100
Business Process Management	2	100
Materials Management	2	100
Maintenance Management	2	100
Project Work in the relevant specialization	8	200
TOTAL	18	700
Total No. of Credits and Marks	72	2800

*Each credit is equivalent to 30 hours of student study comprising of all learning activities.

- **DETAILED SYLLABI**

Enclosed vide Annexure I

- **DURATION OF THE PROGRAMME**

The minimum and maximum period for completion of the MBA Programme is given below:

Programme	Minimum No. of Semesters	Maximum No. of Semesters*
M.B.A.	4	12

*includes the period of **break of study**.

Break of study: If any candidate intends to temporarily discontinue the programme at any point of time during the programme for valid reason he/ she shall apply for break of study in the prescribed format with necessary documents to the Director, Centre for Distance Education not later than the last date for enrolling for the semester examination of that concerned semester. The candidates permitted to rejoin the programme after break of study / prevention due to lack of attendance, shall be governed by the Curriculum and Regulations in force at the time of rejoining.

- **FACULTY AND SUPPORT STAFF**

CDE is functioning with a Director, one Additional Director in the rank of full time Professor and three Deputy Directors in the rank of Associate Professors. The Additional Director and the Deputy Directors are in-charge of each of the academic programmes offered by the CDE. They are responsible for Curriculum & Syllabi Design, Identification of Course Writers and Reviewers and Editing of the Course material.

DIRECTOR

CDE is headed by the Director, who is a full time faculty member of the University appointed by the Vice-Chancellor of Anna University to facilitate the development, implementation and monitoring the programmes offered at CDE and to attend to all administrative matters concerned with the activities of the Centre.

Director is responsible for the following functions:

- Ensures programmes offered through distance education and the instructional design of each programme meet the educational standards of the University.
- Develop and implement policies and guidelines for effective delivery of distance education programmes.
- Co-ordinate with the Deputy directors, Regional Centres and Study Centres to respond swiftly to problems related to distance learning.
- Continuously monitor the student support services mechanism and incorporate technology based changes in the system to deliver services more effectively and efficiently.
- Supervise the staff at CDE, set priorities, assign work and conduct employee evaluations.
- Administer an effective financial discipline in line with the budget allocated by the University.

DEPUTY DIRECTOR

- Deputy Director is a full time faculty member of the University appointed by the Vice Chancellor of the Anna University to administer, monitor and take care of each of the program offered by the CDE.
- Oversees the implementation of the curriculum and the academic programs.
- Assist the Director, CDE in carrying out the academic calendar, starting with the admission process, preparation of the norms for study centres in conduct of classes, identification and managing faculty for contact classes.
- Monitors the internal and University evaluation process and attend all administrative matters concerning the program including the revision of electives and curriculum at appropriate timeline.
- Serve as convener of the Central Steering Committee, that completely monitors the project work, from approving the Guides for each semester, approve schedule project work, monitoring committee and help process the results for the University.
- Empowered by the University to operate the funds for the set assigned to them as well as the study centres of the CDE also.

FACULTY- ASSISTANT PROFESSORS

- Handling MBA classes for the Distance Education students and guiding them for their project work.
- Assisting in the change of Regulations and Curriculum.
- Coordinating with all Study Centres, to maintain academic activities for all specializations including project work.
- Coordinating for the preparation of study materials for all semesters.

- Assisting in the admission work, counseling new students and other issues such as break of study, exemptions etc.
- Assisting the Central Steering Committee for the project work done by the end Semester students.
- Scrutinizing the list of project guides received from all the Study Centres to prepare approved list of guides.
- Preparation of Project Schedule and Report for first and second reviews.
- Co-ordinating with the Central Steering Committee members in the evaluation of project works of students, study centre, project guides and viva voce examinations.

SOFTWARE DEVELOPER

- A customised software has been created for the collection of fees and it has been integrated with dedicated accounting software to have consolidated report on receipts and payments with breakup.
- Refund of Caution Deposit is being made by NEFT based on their data provided in the application at the time of admission. To monitor and track the status of caution deposit application, a software has been designed.
- An integrated Student Tracking System has also been created which includes queries relating the Spelling Correction in the name, Change of Study Centre, Change of Specialization, Break of Study, Change of DOB, Request of Duplication ID card etc.
- An exclusive Software for recording and monitoring the students attendance has been created and uploaded in Anna University portal to enable Study Centres to feed their data through online within the prescribed time limit. After the completion of all the contact classes, prevention list is automatically generated by the software for submission to the Controller of Examinations. Fee receipts are also being generated automatically after duly verified regarding the students eligibility for subsequent semesters.

WEB DESIGNER CUM DEVELOPER

- Advertisement for admission are being uploaded in Anna University Website.
- Candidates those who are unable to come in person, they can download the application form from AU website, for which blank application has been uploaded and monitored by the web designers by assigning the application number etc.
- After the entrance examination, rank list cum counseling call letter is being uploaded. Candidate can download the counseling call letter after entering their registration number and date of birth.
- Semester Fee Schedule, Contact Classes and other details are uploaded in AU website regularly.
- Regulations & Syllabi, Previous years semester examination question papers and other online study materials are uploaded for the benefit of students.
- Study Centre related activities are also being uploaded for effective communication

Correspondence from the Controller of Examinations regarding examination, fee etc. are also being uploaded in AU website.

- MBA Project and M.Sc. Projects are also monitored through online.

SUPPORT STAFF

Administrative staff i.e. Deputy Registrar, Assistant Registrar, Superintendent/Section Officer, Assistant are co-ordinating the activities of the Centre for the following activities with the assistance of other dedicated temporary Professional Assistants, Web Developers, Software Developer, Clerical Assistants, Office Assistants and menials.

ADMINISTRATION

- To prepare the advertisement for inviting applications for calendar year / academic year admissions and hosting the advertisement in Anna University web portal.
- To identify the examination centre for the conduct of Entrance Test
- Allotment of candidates for the entrance examination
- Processing the answer sheets
- Publishing the Rank list cum Call letter to the candidates to attend counseling session for admission
- Counseling for admission to distance education programmes
- Allotment of study centres to the candidates based on their choice
- Intimation of schedule for contact classes
- Disbursement of study centre charges to the Study Centres
- Disbursement of honorarium to the experts
- Purchase of Computers and other lab equipments
- Purchase of furniture and other office equipments

FINANCE

- Budget Estimates for every year are projected and submitted to the Finance Committee for approval.
- Expenditure being met based on the approved budgetary amount
- To monitor the cash flow, Centre is maintaining the mandatory finance and accounts registers such as Appropriation Register, Cash Book, Compilation Register, Advance Register, Cheque issue Register etc.
- Every year Annual Accounts for this centre being prepared and submitted to the Concurrent Audit Section for necessary audit.

MATERIAL DISTRIBUTION

- Material distribution is done at CDE office and a Professional Assistant who is qualified in library science is in-charge of maintaining and distributing study materials.

- Stock register is maintained for receipt and disbursement of study material. Orders are placed well in advance and CDE provides study material to the students immediately on the day they are admitted.
 - The material issue is completely integrated and hence, once the student pays his/her fees in the subsequent semester, they become eligible to receive the books.
 - At the end of every semester physical stock verification is done to ensure the quantity for which orders are to be placed in the subsequent semester.
- **INSTRUCTIONAL DELIVERY MECHANISM**

The program comprise four semesters of which the three semesters contain course work and the last semester has course works in addition to a project work leading to the submission of a master's thesis.

The course work comprises the contact classes for each semester announced by the Study Centre Coordinator and courses enrolled are offered by the faculty members approved. The contact classes will be held during the weekends, the Saturdays and Sundays.

Students are given two assignments during each semester for each course enrolled by the Course Instructors. Students should do this as assignments and submit at dates announced. Evaluation of the assignments will make up the Continuous assessment marks.

Students will write an end semester examination for the theory at the end of each semester by the Controller of Examinations, Anna University.

The project work will be done under the supervision of a Guide approved by the University.

- **MEDIA FOR DELIVERY**

The university adopts a unique methodology of instruction which is different from that being adopted for our regular mode programmes. The methodology is more learner - oriented and the students are expected to take active participation in the teaching learning process. The university follows a multimedia approach for delivering knowledge to the students.

Print Material : Self Learning Material which is self explanatory, self directed is developed and supplied to the students. The learning material is designed as per the credit structure of the programme. It is more interactive in that it contains learning objectives, learning activities and problem solving activities for self assessment. The contents are divided into small sections and sub sections for effective learning and two way communication between the learner and the content.

E-learning Material: Power Point Presentation are prepared by the faculty at CDE and is uploaded in our website and made accessible to the students for all the courses of each programme.

Counseling Sessions: Counseling Sessions are held as per the schedule designed by the CDE well in advance prior to the conduct of classes. They are held on week-ends, i.e. Saturday and Sundays. The contact sessions are decided as per the credits allotted to each course in each programme. For example, four credit theory course is assigned 16 hours of contact session. The coordinator of the study centre shall ensure that contact classes are conducted as per the schedule and every academic counselor outlines the salient points and adopt a blended mode of learning making it more learner centered.

- **STUDENT SUPPORT SERVICE SYSTEM**

The CDE centre of Anna University has established four Regional Centres and seven Study Centres throughout Tamil Nadu . They are engaged in providing pre- admission counseling for potential learners, support for admission activities, act as information centres, distribute study material to the students admitted. Apart from providing counseling facilities they also act as examination centres.

Once a student gets admitted to CDE, the CDE headquarters creates a database with all the essential particulars that provides online solutions to all the student related queries.

The queries relating to Corrections in name, Change of Study Centres, Change of Specialization, Break of Study, Corrections in DOB, Refund of Caution Deposit, Issue of Duplicate ID Card are made by forms available online and are dealt with by the technical support team of CDE retrieving data from the database.

Each batch is assigned a set in charge who responds swiftly to all the demands of the students relating to that particular batch. The entire batch in charges and administrative staff are connected through intranet and every change made by them after the approval of the Director gets reflected in the database.

Information regarding Schedule of classes, Internal marks, End semester examination schedule are provided through study centers and is also available on the web. Model End semester question papers are also available on the web.

The End semester examination results are announced within a month after completion of the examinations and are available on the web.

5. PROCEDURE FOR ADMISSION, CURRICULUM TRANSACTION AND EVALUATION

- **ADMISSION PROCEDURE**

Admission is done directly by the Head quarters. Students are admitted in two sessions every year; the Academic year batch during July session and Calendar year batch during January session. Advertisements are placed in media to invite applications for each session.

Students Admitted to MBA program are required to have obtained any degree. Degrees must have been obtained through formal mode (10 +2 or equivalent).

Apart from the basic eligibility, the candidate should pass in the Entrance Test conducted by Centre for Distance Education, Anna University, Chennai.

Students admission is done by the Centre for Distance Education, Anna University. Student enrolment is done programme wise in every year: **CY** - Calendar Year - (January Session) and **AY** - Academic Year - (July Session)

Blank application form can be downloaded from the web-site “annauniv.edu/cde” and the same may be filled up. The completed application along with the demand draft towards application fee should be sent “The Director, Centre for Distance Education, Anna University ” before the last date for receipt of application as prescribed from time to time.

Distance Entrance Exam Test (DEET)

All candidates who have made an application should write the DEET on the specified date, except those who have a valid TANCET score.

The question paper will be designed to test the capability of the candidates in the following areas : Data analysis, Comprehension skill, Basic Quantitative ability, English.

While evaluating the answers, one mark is awarded for each correct answer. No negative marks for wrong answers.

Candidates who are provisionally eligible for admission will be informed through counseling call letter based on their rank obtained in the DEET/TANCET.

Candidates or their authorized representative should attend the counseling with all original certificates with Demand Draft towards 1st semester fee.

Selection is based on the marks in the Entrance Test (DEET score) / TANCET score card. Based on the rank, Study Centre/Specialization will be provisionally allotted through counseling as per their choice.

FINANCIAL ASSISTANCE

Financial Assistance is extended as follows:

- Tuition Fee is fully exempted for Differently abled persons provided they produce a certificate from the Chairman, District Medical Board in the prescribed format.
- 50% tuition fee concession is given to for regular staff members who are working in Anna University.
- **DELIVERY MECHANISM (WEB BASED)**

The contact classes are conducted at Class rooms available in the Headquarters of CDE, regional centres & study centres which are departments of the Anna University / Affiliated Colleges. These class rooms are equipped with facilities including multi-media projection

systems, white boards, internet connectivity and smart boards. Each centre is headed by a coordinator and assisted by counselors and faculty according to the strength of the students. On the Academic front, the functions of the staff through whom academic transaction takes place is shown below:

Staff

Study centre Coordinator

Each study centre has a study centre coordinator

The Study centre coordinator is either the Principal of the Institution or a Senior faculty member

Counselors

The study centre coordinator is required to appoint separate counselors for each of the programmes of each set admitted.

A Counselor can at a time be in charge for maximum of 4 batches of 60 students each

The Counselor is a faculty member / visiting faculty of the respective programmes.

Faculty handling classes

The study centre coordinator and counselor are expected to identify faculty from their own institution or from affiliated institutions for handling classes

Functions

In charge for all the students studying through the distance education scheme of Anna University Chennai.

Is responsible for maintaining all accounts pertaining to the activities of the study centre

Is responsible for receipt and distribution of course material

Is responsible for arranging senior faculty members to handle contact classes and/ or labs

Is responsible for regular conduct of classes

Is responsible for maintaining the attendance details of all students allocated to him/her

Is responsible for collecting the internal assessment marks from all faculty handling classes and forwarding the same to the Coordinator

Is responsible for teaching classes regularly according to the syllabus and clearing the doubts of the students.

The course is all about presenting the material using PowerPoint to include insights and supporting data. Design principles for effective visuals and slides.

Is responsible for taking attendance regularly

Is responsible for conducting and evaluating periodic assessments for calculation of internal marks.

• **ACADEMIC PLANNER**

MONTHS	WEEKS	ACADEMIC YEAR ACTIVITES	CALENDAR YEAR ACTIVITES
October	First	Semester begins for Academic year	-
	Third	Release of Guidelines for project work Online Registration begins	-
November	First	-	Publication of Advertisement for Calendar year batch
	Third	Last date for submission of Project proposal Online Registration closes	-
	Fourth	Updating the Project proposal status	-
December	First & Second	First Review of Project work	-
	Third	Last date for submission of 1st Review marks to CDE by study centres	-
	Fourth	Project - Updating the recommended status by CDE	-
January	First	Contact classes for Semester ends	-
		Attendance finalized, Prevented list generated	-
		Second Review of project work	-
	Third	Last date for submission of second Review marks to CDE by Study centres	-
	Fourth	Last date for sending the attendance, Internal Assessment and prevention list for Project work to COE	-
		Semester examination fee collection	-
February	First	-	Last date for receipt of MBA, MCA application for CY batch
		Project - Link opens for Online submission of project work	-
	Second	-	Conduct of Entrance Test for CY batch
		COE - End Semester Examination begins	
	Fourth	-	Entrance Test - Publication of result
		Project work - Last date for Online submission (Full project - hard & CD). Last date to submit internal marks to COE and CDE by study centres.	-
March	First	Last date for submission of Viva Voce panel to COE.	-
		Project - Viva voce Examination begins	Semester fee collection begins
	Second	End Semester examination ends	-
		-	Counseling & Admission for CY batch
Third	Last date for sending Viva voce examination marks to COE	-	

April	First	-	Semester begins for Calendar Year batch
	Third		Release of Guidelines for project work Online Registration begins
May	First	Publication of Advertisement for Academic year batch	
	Third		Last date for Submission of Project proposal Online Registration closes
	Fourth		Updating the Project proposal status
June	First & Second		First Review of Project work
	Third		Last date for submission of First Review marks to CDE by study centres
	Fourth		Project - Updating the recommended status by CDE
July	First		Contact classes for Semester ends
			Attendance finalized, Prevented list generated
	Third		Second Review of project work
	Fourth		Last date for submission of Second Review marks to CDE by Study centres
		Last date for sending the attendance, Internal Assessment and prevention list for Project work to COE Semester examination fee collection	
August	First	Last date for receipt of MBA, MCA application for AY batch	
			Project - Link opens for Online submission of project work
	Second	Conduct of Entrance Test for AY batch	
			COE - End Semester Examination begins
	Fourth	Entrance Test - Publication of result	
Last date for receipt of MSc (CS) application for AY batch		Project work - Last date for Online submission (Full project - hard & CD). Last date to submit internal marks to COE and CDE by study centres.	
September	First		Last date for submission of Viva Voce panel to COE
		Semester fee collection	Project - Viva voce Examination begins
	Second		End Semester examination ends
		Counselling & admission for AY batch	
	Third		Last date for sending Viva voce examination marks to COE

- **EVALUATION PROCEDURE**

Each course has internal and External evaluation to pass the course and earn credits.

INTERNAL EVALUATION

Periodical assignments are given and internal tests are conducted periodically. These assignments and tests are used to calculate the internal marks

COURSE EVALUATION

Type of Course	Internal Assessment	End Semester Examination
Theory	20%	80%
Practical	20%	80%
Project Work		
Internal Assessment	Evaluation of Project report by External Examiner	Viva-Voce Examination
20%	30%	50%

EXTERNAL EVALUATION

The End semester Examinations in case MBA will be conducted during February and August months of each year by the Controller of the Examinations, Anna University. All the activities like paper setting, Conduct of examination, Declaration of results and Assessing the examination papers are done in-house by the Office of the Controller of Examinations, Anna University.

The question papers are set by experts in the respective fields of study. They are chosen from among a panel of experts (prepared from the list of teachers & experts sent by the various Universities and leading colleges). This is done directly by the confidential section of the Office of the Controller of Examinations.

There shall be one end semester examination of 3 hours duration for each theory course. The examinations shall ordinarily be conducted between May and July during the odd semesters and between November and January in the even semesters. For the practical examinations (including project work), both internal and external examiners shall be appointed by the Controller of Examination.

The end semester evaluation of the Project work will be based on the project report and a Viva-Voce Examination by a team consisting of the guide and External Examiner(s) who are appointed depending on the chosen areas of specialization of the students. The External Examiner(s) shall be appointed by the Controller of Examinations, Anna University Chennai.

If a student indulges in malpractice in any of the end semester / internal examinations, he / she shall be liable for punitive action as prescribed by the Director, Academic Courses as per the University regulations from time to time.

The End semester examinations are conducted by the Office of the Controller of Examinations, Anna University Chennai as per the method followed for regular programmes. The Examinations are conducted at various study centre/colleges in the region throughout the country by appointing a Chief Superintendent who in turn conducts the examination with the Hall invigilators from among the faculty of local colleges. The overall conduct is supervised by the Anna University representatives sent by the University.

A candidate who secures not less than 50% of total marks prescribed for the courses with a minimum of 50% of the marks prescribed for the end-semester Examination in both theory and practical courses shall be declared to have passed in the Examination.

If a candidate fails to secure a pass in a particular course he / she shall reappear for the examination till he / she secures a pass. However, the internal assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts.

A student who has passed any course / all the courses prescribed in the curriculum for the award of the degree shall not be permitted to re-enroll to improve his/her marks in a course or the aggregate marks respectively.

REVALUATION

Revaluation procedure is available for the students who opt for the same by paying Revaluation fee. Also Photocopies of Answer papers are given to the students who requires the same on payment of fees for the same.

A candidate can apply for revaluation of his/her semester examination answer paper in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations through the Coordinator of the Study Centre concerned and Director, Centre for Distance Education. The Controller of Examination will arrange for the revaluation and the results will be intimated to the candidate concerned through the Coordinator of the Study Centre. Revaluation is not permitted for practical courses and for project work.

Copies of the answer scripts for the theory course(s) can be obtained from the Controller of Examinations, Anna University on payment of fee specified for this purpose.

The final Project Report for all the programmes shall be submitted at the end of the final Semester as per the schedule announced by the Central Steering Committee. The Project Report prepared according to approved guidelines and duly signed by the guide(s) shall be submitted to Coordinator of Study Centre or Coordinating Centre. The final project report must also be submitted online as a word document to the Director, CDE on or before the specified date.

If the candidate fails to obtain 50% of the Continuous Assessment marks in the Project Work, he/she will not be permitted to submit the report and has to re-enroll for the same in the subsequent semester.

If the candidate fails to submit the Project Report on or before the specified deadline he/she is deemed to have failed in the Project Work and shall re-enroll for the same in a subsequent semester.

If the candidate fails in the viva-voce examination he/she shall re-enroll for the same in the subsequent semester.

6. LABORATORY SUPPORT AND LIBRARY RESOURCES

• LABORATORY SUPPORT

The CDE has a Computer Lab with state-of-the-art infrastructure located in a spacious air conditioned hall, housing a local server, 84 personal computers connected by high speed Internet and wireless networks, LAN and printers, white board with multi-media projection facilities.

SERVERS WITH CONFIGURATION

SL.NO.	SERVER MODEL	CONFIGURATION	SOFTWARE	USAGE
1	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS/ Oracle 10 g	Fees collection/book material stock/accounts/ Counseling
2	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS/ Oracle 10 g	Web server
3	Dell Power Edge VRTX M620	Intel Xeon processor 2.30 GHz/ 96 GB RAM/ 4 TB Storage	Windows 2008 Server OS /ASP.Net	Student Attendance / Student Management
4	Dell Power Edge R710	Intel Xeon Processor 2.00 GHz/8 GB RAM/ 1 TB Storage	Linux Ubuntu 14.04 / Windows 2008 Server OS/Oracle 10g/C++	Computer Lab
5	Wibro	Intel Xeon Processor 2.00 GHz/8 GB RAM/ 1 TB Storage	Windows 2008 Server OS	Web server backup

LAB COMPUTERS WITH CONFIGURATION

SL.NO.	COMPUTER MODEL	TOTAL NO. OF COMPUTER	CONFIGURATION	SOFTWARE
1	Dell	24 Nos.	Intel i7 processor /8 GB RAM/1 TB Storage	Windows 7 Professional OS/ D2K, C++, Putty, Java, Netbeans, Android, MS Office, VB, Visual studio 2008
2	Acer	60 Nos.	Intel i5 processor /4 GB RAM/500 GB Storage	

The Centre for Distance Education, Anna University Chennai utilizes the services of Ramanujan Computing Centre, the centralized computing facility available at the University in times of necessity.

In addition, the Centre for Distance Education, Anna University Chennai has the provision to utilize the services of Educational Multimedia Research Centre for studio facilities for preparation of Multimedia material.

• LIBRARY RESOURCES

The centre has an exclusive library which caters to the needs of the students of distance education. Library books are maintained in racks and shelves with glass doors. Library caters to the information needs to the faculty, and PG students. Books are available on the following areas of study

- Management Studies.
- Information & Communication Studies.
- Mathematics, Statistics & Computer Science Studies.
- General Knowledge & Languages.
- Competitive Examinations (TNPSC, UGC-NET, RRB, SSC, UPSC, etc.).
- Dictionaries and University annual magazines and daily news papers.

A stock register is maintained and all purchases and issues are registered in it. Books are maintained and issued with the help of a Library management system software designed for this purpose.

Books are available both for closed reference and also for issue. Students can borrow books returnable in two weeks time. Online reference is also made available to both staff and students.

Subject wise and title wise count for Library books:

Sl. No.	Department (Programme)	No. of. Titles	No. of . books
1.	GENERAL	75	75
2.	MBA	566	2294
3.	MCA	142	439
4.	MSC	54	250
Total		837	3058

A Professional Assistant who is qualified Librarian is in-charge of the library of the CDE and the library is kept open on all working days.

7. COST ESTIMATION OF THE PROGRAMME

COST ESTIMATION	2018-19
	AMOUNT (Rs.)
PROGRAMME DEVELOPMENT COST	7700000
Printing of Study Material	
Course Reviewer charges	
PROGRAMME DELIVERY COST	20000000
Study Centre charges	
PROGRAMME MAINTENANCE COST	16363000
Remuneration to CSC Members	
Consolidated Pay for Faculty	
Entrance Test and Counseling expenses	
Wages / Emoluments for temporary staff members	
Postage and Telegrams	
Remuneration & Honorarium	
Stationery & Printing charges	
Advertisement charges	9280000
INFRASTRUCTURE DEVELOPMENT COST	
Purchase of furniture and repairs	
Computer & other Accessories	
Purchase and maintenance of office equipments	

Books & Periodicals	
Building & Amenities	
ADMINISTRATIVE COST	
fuel charges	
Contingencies	
Maintenance of Vehicles and hire charges	
Security & Housekeeping charges	
Refreshments and Hospitality	
Telephone charges	
Travel expenses	
Design & Development	
Conduct of meeting	
Civil Maintenance	
Electrical Maintenance	
TOTAL	3476000
	56819000

8. QUALITY ASSURANCE MECHANISM AND EXPECTED OUTCOMES

EXECUTIVE COMMITTEE

The Centre for Distance Education of Anna University is governed by an Executive Committee, chaired by the Vice-Chancellor of the University. Executive Committee comprises of internal members from related departments of Anna University, subject experts from other Universities / Institutions and renounced management experts from industry.

The Executive Committee is convened once in 6 months to review the academic, administrative and finance related activities of the centre. The approval of Executive Committee is mandatory for all the ongoing activities and future development plans.

CENTRAL STEERING COMMITTEE

In addition to the CIQA, to ensure quality in the Project work CDE is already functioning with a Central Steering Committee for each programme headed by the Director , CDE and includes experts from our University departments of the concerned Programmes. It is established to directly approve, monitor, track and administer the project work and its internal evaluation at the Centre for Distance Education, Anna University, Chennai.

CENTER FOR INTERNAL QUALITY ASSURANCE (CIQA)

In order to have a dynamic quality assurance system, CDE has established a Center for Internal Quality Assurance (CIQA), to carry out the various functions relating to maintenance of quality,

continuous improvement, regular monitoring of academic and administrative activities, deciding the programme delivery mechanism and to oversee and report the effectiveness of the system specified in the UGC (ODL) regulations 2017.

- **REVIEW MECHANISM**

CURRICULUM REVISION

As per Anna University policy, the Curriculum Revision takes place every four years. The curriculum Revision for MBA as per UGC ODL Norms 2017 was approved and will be implemented from 2018-19.

The faculty to teach the contact classes are selected as per University norms for teaching staff and approved by the Central Steering Committee appointed by the Vice Chancellor of the University.

STUDENTS FEEDBACK

Every semester the students of each batch are invited to provide an online “Student Feed Back” questionnaire form for each of the course studied by them. The questionnaire is designed to assess the quality of teaching, coverage of the syllabus, class room tools used, and overall conduct of classes and the infrastructure of the Study Centre concerned. All the feedback responses are pooled/evaluated for each course and is considered in the management of faculty for the next semester classes.

The students are free to meet the counselors / Technical Staff / Program in charge / Director CDE during office hours for any of their requirements. They can also interact through the CDE website also.

- **MONITORING MECHANISM**

ATTENDANCE FOR CONTACT CLASSES

Ideally every student is expected to attend all counseling sessions / classes and secure 100% attendance. However, the student must have a minimum of 50% attendance, to be eligible to appear for the end-semester examination in that semester, failing which, he / she is required to repeat the incomplete semester in the next semester.

Every course instructor is required to maintain an ‘ATTENDANCE AND ASSESSMENT RECORD’ which consists of attendance marked in each counseling session or practical or project work interaction. This should be submitted to the Coordinator of the Study Centre for checking the conduct of the interactive counseling sessions, syllabus coverage and the records of assessment marks and attendance.

Online portal for attendance entry is kept opened for the subsequent 3 days after the week-ends on which classes are conducted. The study centres will make online entry of the attendance provided by the course instructors. It is locked on the third working day and no study centre can enter attendance without the approval of the Director, CDE. After 50% classes are over, the attendance particulars of all the students are published to enable them

to know their status. At the end of the semester, prevention list for all centres are prepared at the office of the Director, CDE and sent to the Controller's office to arrive at preparing the eligible list of students for writing the examination. Hence CDE insists on monitoring the students attending the contact classes.

PROJECT WORK

Since project work is an integral component of the MBA program, and carries more credits, CDE adopts a two stage monitoring system. A project proposal validated by the guide has to be submitted online to the **Central Steering Committee**, for approval, as per the schedule in the project semester. The students can proceed with their project work only after their proposals are reviewed and approved by the **Central Steering Committee**, Centre for Distance Education.

In the next stage, there shall be two project reviews (each 100 marks) by the Project Monitoring Committee (PMC) at the study centers constituted by the Coordinators and approved by the Director (CDE), in the project semester. The student is require to make a presentation on the progress made before the PMC. The continuous assessment marks from both reviews shall be 40 marks which includes marks provided by the guides of the concerned project based on their interaction with them.

- **GRIEVANCE REDRESSAL MECHANISM**

The Anna University has in place an grievance redressal mechanism for its members including the sexual harassment cell. Any member of the University can access the services through the University portal to avail the services and get their problems resolved.

The CDE will develop an internal cell comprising three members to address the needs / problems of the students. A link will be created in the CDE website for the students to access the services online.

**REGULATIONS 2018
ANNA UNIVERSITY
MBA (DISTANCE MODE)
REGULATIONS 2018
SYLLABUS I, II, III AND IV SEMESTER**

I and II Semesters are Common to:

**MBA - General Management
MBA - Technology Management
MBA - Marketing Management
MBA - Human Resource Management
MBA - Financial Services Management
MBA - Operations Management**

I and II Semesters are Common to:

**MBA - Health Services Management
MBA - Hospitality and Tourism Management**

SEMESTER – I

MANAGEMENT CONCEPTS

C	M
2	100

COURSE OBJECTIVE: The purpose of this course is to expose the student to the basic concepts of management in order to aid the student in understanding how an organization functions, and in understanding the complexity and wide variety of issues managers face in today's business firms.

COURSE OUTCOME: Completing this course will make the students knowledgeable on the historical, current, and future issues in management.

UNIT I INTRODUCTION TO MANAGEMENT - Evolution of Management thoughts – Contribution of Selected Management Thinkers – Various approaches to management – contemporary management practice – Managing in global environment – Managerial functions.

UNIT II PLANNING - Importance of planning – Types of planning – decision making process – Approaches to decision making – Decision models – Pay off Matrices – Decision trees – Break Even Analysis.

UNIT III ORGANISING - Departmentation – Span of Control – Delegation –

Centralisation and Decentralisation – Committees – Line and Staff relationships – Recent trends in organisation structures.

UNIT IV STAFFING - Process of Recruitment, Selection, Induction Training – Motivation – Leading – Leadership styles and qualities – Communication – process and barriers.

UNIT V CONTROLLING - Managements control systems – techniques – Types of control.

TEXT BOOKS:

1. Stephen P. Robbins and David A. Decenzo, "Fundamentals of Management", Pearson Education, 8th Edition, 2012.
2. J.S.Chandan, "Management Concepts and Strategies", Vikas Publishing House, 2010.

REFERENCE BOOKS :

1. Tim Hannagan, "Management Concepts and Practices", Macmillan India Ltd., 5th Edition, 2009.
2. Hellriegel, Jackson and Slocum, "Management: A Competency-Based Approach", South Western, 11th edition, 2007.
3. Stewart Black and Lyman W. Porter, "Management – Meeting New Challenges", Prentice Hall, 2000.
4. Koontz, "Essentials of Management", Tata McGraw-Hill, 7th Edition, 2006.
5. Bateman Snell, "Management: Competing in the new era", McGraw-Hill Irwin, 5th Edition, 2002.

STATISTICS FOR MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand and communicate statistical findings, to learn to apply statistical tools to solve managerial questions, to learn to critically assess statistical designs and methods.

COURSE OUTCOME: Students will be able to think critically about the data arising in management environments, selecting the best tools to describe, analyze, and exploit this data for decision support.

UNIT I PROBABILITY - Basic definitions and rules for probability, conditional probability, independent of events, Baye's Theorem, random variables, Probability distributions: Binomial, Poisson, Uniform and Normal Distributions.

UNIT II SAMPLING DISTRIBUTION AND ESTIMATION - Introduction to sampling distributions, sampling techniques, sampling distribution of mean

and proportion, application of central limit theorem. Estimation: Point and Interval estimates for population parameters of large sample and small samples, determining the sample size.

UNIT III TESTING OF HYPOTHESIS - Hypothesis testing: one sample and two samples tests for means and proportions of large samples (z-test), one sample and two sample tests for means of small samples (t-test), F-test for two sample standard deviations.

UNIT IV NON-PARAMETRIC METHODS - Sign test for paired data. Rank sum test: Mann – Whitney U test and Kruskal Wallis test. One sample run test, Rank correlation. Chi-square tests for independence of attributes and goodness of fit.

UNIT V CORRELATION, REGRESSION AND TIME SERIES ANALYSIS - Correlation analysis, estimation of regression line. Time series analysis: Variations in time series, trend analysis, cyclical variations, seasonal variations and irregular variations.

TEXT BOOKS:

1. Levin R.I. and Rubin D.S., "Statistics for management", 7th edition, Prentice Hall of India Pvt. Ltd., New Delhi, 2001.
2. Aczel A.D. and Sounderpandian J., "Complete Business Statistics", 5th edition, Tata McGraw – Hill Publishing Company Ltd., New Delhi, 2009.
3. Anderson D.R., Sweeney D.J. and Williams T.A., "Statistics for business and economics", 8th edition, Thomson (South – Western) Asia Pte. Ltd., Singapore, 2010.

REFERENCE BOOKS:

1. Levine D.M., Krehbiel T.C. and Berenson M.L., "Business Statistics: A First Course", Pearson Education Asia, 2nd edition, New Delhi, 5th Edition, 2009.
2. Hooda R.P., "Statistics for Business and Economics", 2nd edition, Macmillan India Ltd., 2010.
3. Morse L.B., "Statistics for Business and Economics", HarperCollins college Publishers, New York, 1994.

ECONOMIC ANALYSIS FOR BUSINESS

C	M
2	100

COURSE OBJECTIVE:

The course is designed to enable the students to make sense of the array of economic data and events that are surrounded by and to place those into a logical and consistent framework. It helps to make own judgments about the likely consequences of various economic events, including the likely policy response of

decision makers.

COURSE OUTCOME: At the end of the course the students will be able to identify the major economic problems that may affect an economy and to apply simple microeconomic theory to some practical problems

UNIT I INTRODUCTION - The themes of economics – scarcity and efficiency – three fundamental economic problems – society's capability – Production possibility frontiers (PPF) – Productive efficiency Vs economic efficiency – economic growth & stability – Micro economies and Macro economies – the role of markets and government – Positive Vs negative externalities.

UNIT II CONSUMER AND PRODUCER BEHAVIOUR - Market – Demand and Supply – Determinants – Market equilibrium – elasticity of demand and supply – consumer behaviour – consumer equilibrium – Approaches to consumer behaviour – Production – Short-run and long-run Production Function – Returns to scale – economies Vs diseconomies of scale – Analysis of cost – Short-run and long-run cost function – Relation between Production and cost function.

UNIT III PRODUCT AND FACTOR MARKET - Product market – perfect and imperfect market – different market structures – Firm's equilibrium and supply – Market efficiency – Economic costs of imperfect competition – factor market – Land, Labour and capital – Demand and supply – determination of factor price – Interaction of product and factor market – General equilibrium and efficiency of competitive markets.

UNIT IV PERFORMANCE OF AN ECONOMY – MACRO ECONOMICS - Macroeconomic aggregates – circular flow of macroeconomic activity – National income determination – Aggregate demand and supply – Macroeconomic equilibrium – Components of aggregate demand and national income – multiplier effect – Demand side management – Fiscal policy in theory.

UNIT V AGGREGATE SUPPLY AND THE ROLE OF MONEY - Short-run and Long-run supply curve – Unemployment and its impact – Okun's law – Inflation and the impact – reasons for inflation – Demand Vs Supply factors – Inflation Vs Unemployment tradeoff – Phillips curve – short-run and long-run – Supply side Policy and management- Money market- Demand and supply of money – money-market equilibrium and national income – the role of monetary policy

TEXT BOOKS:

1. Paul A. Samuelson and William D. Nordhaus, "Economics", 19th edition,

- Tata McGraw Hill, 2006.
2. William Boyes and Michael Melvin, "Textbook of economics", Biztantra, 2007.
 3. N. Gregory Mankiw, "Principles of Economics", 6th edition, Thomson learning, New Delhi, 2011.
 4. Richard Lipsey and Alee Charystal, "Economics", 12th edition, Oxford University Press, New Delhi, 2011.
 5. Karl E. Case and Ray C. fair, "Principles of Economics", Pearson Education Asia, New Delhi, 10th edition, 2011.

ORGANIZATIONAL BEHAVIOUR

C	M
2	100

COURSE OBJECTIVE: To gain a solid understanding of human behavior in the workplace from an individual, group, and organizational perspective and frameworks and tools to effectively analyze and approach various organizational situations.

COURSE OUTCOME: Students will be able to apply problem solving and critical thinking abilities to analyze the kinds of choices available for developing alternative organizational behavior approaches in the workplace.

UNIT I FOCUS AND PURPOSE - Definition, need and importance of organizational behaviour – Nature and scope – Framework – Organizational behaviour models.

UNIT II INDIVIDUAL BEHAVIOUR - Personality – types – Factors influencing personality – Theories – Learning – Types of learners – The learning process – Learning theories – Organizational behaviour modification - Misbehaviour – Types – Management Intervention. Emotions - Emotional Labour – Emotional Intelligence – Theories. Attitudes – Characteristics – Components – Formation – Measurement- Values. Perceptions – Importance – Factors influencing perception – Interpersonal perception- Impression Management Motivation – importance – Types – Effects on work behavior.

UNIT III GROUP BEHAVIOUR - Organization structure – Formation – Groups in organizations – Influence – Group dynamics – Emergence of informal leaders and working norms – Group decision making techniques – Team building - Interpersonal relations – Communication – Control.

UNIT IV LEADERSHIP AND POWER - Meaning – Importance – Leadership styles – Theories – Leaders Vs Managers – Sources of power – Power

centers – Power and Politics.

UNIT V DYNAMICS OF ORGANIZATIONAL BEHAVIOUR - Organizational culture and climate – Factors affecting organizational climate – Importance. Job satisfaction – Determinants – Measurements – Influence on behavior. Organizational change – Importance – Stability Vs Change – Proactive Vs Reaction change – the change process – Resistance to change – Managing change. Stress – Work Stressors – Prevention and Management of stress – Balancing work and Life. Organizational development – Characteristics – objectives – Organizational effectiveness.

TEXT BOOKS:

1. Stephen P. Robins, "Organisational Behavior", PHI Learning / Pearson Education, 15th edition, 2012.
2. Fred Luthans, "Organisational Behavior", McGraw Hill, 12th Edition, 2005.

REFERENCE BOOKS:

1. Schermerhorn, Hunt and Osborn, "Organisational Behavior", John Wiley, 12th Edition, 2011.
2. Udai Pareek, "Understanding Organisational Behaviour", 2nd Edition, Oxford Higher Education, 2008.
3. Mc Shane & Von Glinov, "Organisational Behaviour", 6th Edition, Tata McGraw Hill, 2012.
4. Hellrigal, Slocum and Woodman, "Organisational Behavior", Cengage Learning, 2010.
5. Ivancevich, Konopaske & Maheson, "Oranisationl Behaviour & Management", 14th edition, Tata McGraw Hill, 2011.

COMMUNICATION SKILLS

C	M
2	100

COURSE OBJECTIVE: To understand how communication works, and to manage the assumptions more effectively. Helps students communicate effectively, appropriately and clearly in all situations.

COURSE OUTCOME: Students will be able to identify barriers to effective communication and how to overcome them.

UNIT I COMMUNICATION IN BUSINESS - Systems approach- forms - functions and principles of communication - management and communication- communication patterns - barriers to communication - interpersonal perception – SWOT analysis -Johari

Window -Transactional Analysis.

- UNIT II NON-VERBAL AND INTERCULTURAL COMMUNICATION** - Importance of non-verbal communication - personal appearance - facial expressions- movement- posture – gestures - eye contact –voice - beliefs and customs- worldview and attitude.
- UNIT III ORAL COMMUNICATION** - Listening - types and barriers to listening - speaking - planning and audience awareness - persuasion- goals - motivation and hierarchy of needs - attending and conducting interviews-participating in discussions, debates - and conferences - presentation skills- para-linguistic features -fl uency development strategies.
- UNIT IV BUSINESS CORRESPONDENCE** - Business letter - principles of business writing- mem-os -e-mails – agendas- minutes- sales letter- enquiries- orders- letters of complaint- claims and adjust-ments- notice and tenders- circulars- letters of application and résumé.
- UNIT V BUSINESS PROPOSALS AND REPORTS** - Project proposals- characteristics and structure- Project reports – types- characteristics,-structure-Appraisal reports – performance appraisal, product appraisal- Process and mechanics of report writing- visual aids- abstract - executive summary- rec-ommendation writing- defi nition of terms.

TEXT BOOKS:

1. Lesikar, Raymond V., John D Pettit, and Mary E FlatlyLesikar's, "Basic Business Communication", Tata McGraw-Hill, 11th edition, New Delhi, 2007.
2. Gerson, Sharan J., and Steven M Gerson, "Technical Writing: Process and Product", Pearson Education, New Delhi, 8th Edition, 2013.
3. Murphy, Herta, Herbert W Hildebrandt, and Jane P Thomas, "Effective Business Communication", 7th ed. Tata McGraw-Hill, New Delhi.
4. Bovee, Courtland and John V Thill, "Business Communication Today", Pearson Education, New Delhi, 11th edition, 2012.

REFERENCE BOOKS:

1. McGrath, E. H., S. J, "Basic Managerial Skills for All", Prentice-Hall of India, New Delhi, 8th ed. 2011.
2. Raman, Meenakhshi, and Prakash Singh, "Business Communication", O U P, New Delhi, 2nd Edition, 2012.
3. Stuart Bonne E., Marilyn S Sarow and Laurence Stuart, "Integrated Business Communication in a Global Market Place",3rd ed. John Wiley India, New Delhi, 2007.
4. Guffey, Mary Ellen., "Business Communication: Process and Product",

Thomson and Southwestern, 7th edition, 2010.

ACCOUNTING FOR MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: Students acquire knowledge of internal accounting system, cost classification, cost behavior, cost volume profit analysis, budget and variance analysis in decision making.

COURSE OUTCOME: Students will be able to apply cost relationship for analysis, use costs in pricing and decision making.

UNIT I FINANCIAL ACCOUNTING - Introduction to Financial, Cost and Management Accounting- Generally accepted accounting principles, Conventions and Concepts-Balance sheet and related concepts- Profit and Loss account and related concepts - Introduction to inflation accounting- Introduction to human resources accounting.

UNIT II COMPANY ACCOUNTS - Meaning of Company -Maintenance of Books of Account-Statutory Books- Profit or Loss Prior to incorporation- Final Accounts of Company. Employees stock option- Buy back of securities.

UNIT III ANALYSIS OF FINANCIAL STATEMENTS - Analysis of financial statements – Financial ratio analysis, cash flow (as per Accounting Standard 3) and funds flow statement analysis.

UNIT IV COST ACCOUNTING - Cost Accounts - Classification of manufacturing costs - Accounting for manufacturing costs. Cost Accounting Systems: Job order costing - Process costing- Activity Based Costing. Costing and the value chain- Target costing.

UNIT V MANAGEMENT ACCOUNTING - Marginal costing including decision making- Budgetary Control & Variance Analysis - Standard cost system.

TEXT BOOKS:

1. M.Y.Khan & P.K.Jain, "Management Accounting", Tata McGraw Hill, 5th edition, 2009.
2. R.Narayanaswamy, "Financial Accounting – A managerial perspective", PHI Learning, New Delhi, 4th edition, 2011.

REFERENCE BOOKS:

1. Jan Williams, "Financial and Managerial Accounting – The basis for business Decisions", Tata McGraw Hill Publishers, 15th edition, 2011.
2. Horngren, Surdem, Stratton, Burgstahler, Schatzberg, "Introduction to Management Accounting", PHI Learning, 16th edition, 2013.
3. Stice & Stice, "Financial Accounting Reporting and Analysis", Cengage Learning, 11th edition 2010.
4. Singhvi Bodhanwala, "Management Accounting -Text and cases", PHI Learning, 2008.
5. Ashish K. Battacharya, "Introduction to Financial Statement Analysis", Elsevier, 2007.

LEGAL ASPECTS OF BUSINESS

C	M
2	100

COURSE OBJECTIVE: To develop an awareness of the legal framework within which business operates in India and to give to the students the basic understanding of some of the important legal aspects of business.

COURSE OUTCOME: Helps students to avoid/resolve legal problems in a variety of business situations.

- UNIT I **MERCANTILE AND COMMERCIAL LAW THE INDIAN CONTRACT ACT 1872**** - Essential of a valid contract, Void Agreements, Definition of contract, Formation of a contract, performance of contracts, breach of contract and its remedies, Quasi contracts.
- THE SALE OF GOODS ACT 1930** - Sales contract, Transfer of title and risk of loss, Guarantees and Warranties in sales contract, performance of sales contracts, conditional sales and rights of an unpaid seller.
- NEGOTIABLE INSTRUMENTS ACT 1881** - Nature and requisites of negotiable instruments. Transfer of negotiable instruments and liability of parties, enforcement of secondary liability, holder in due course, special rules for Cheque and drafts, discharge of negotiable instruments.
- AGENCY** - Nature of agency – Creation of agency, types of agents, Agent's authority and liability of principal and third party: Rights and duties of principal, agents and Third party, liability of agents torts, termination of agency.
- UNIT II **COMPANY LAW - Major principles**** – Nature and types of companies, Formation, Memorandum and Articles of Association, Prospectus, Power, duties and liabilities of Directors, winding up of companies, Corporate Governance.

- UNIT III INDUSTRIAL LAW** - An Overview of Factories Act, Payment of Wages Act, Payment of Bonus Act, Industrial Disputes Act.
- UNIT IV INCOME TAX ACT AND SALES TAX ACT** - Corporate Tax Planning, Overview of central Sales Tax Act 1956 – Definitions, Scope, Incidence of CST, Practical issues of CST, Value Added Tax – Concepts, Scope, Methods of VAT Calculation, Practical Implications of VAT.
- UNIT V CONSUMER PROTECTION ACT AND INTRODUCTION OF CYBER LAWS** - Consumer Protection Act – Consumer rights, Procedures for Consumer grievances redressal, Types of consumer Redressal Machineries and Forums, Cyber crimes, IT Act 2000 and 2002, Cyber Laws, Introduction of IPR – Copy rights, Trade marks, Patent Act.

TEXT BOOKS:

1. N. D. Kapoor, "Elements of mercantile Law", Sultan Chand and Company, India, 2008.
2. P. K. Goel, "Business Law for Managers", Bizentra Publishers, India, 2008.

REFERENCE BOOKS:

1. P. P. S. Gogna, "Mercantile Law", S. Chand & Co. Ltd., India, 11th Edition, 2010.
2. Dr. Vinod, K. Singhania, "Direct Taxes Planning and Management", 2008.
3. Akhileshwar Pathack, "Legal Aspects of Business", 4th Edition, Tata McGraw Hill, 2007.
4. Richard Stim, "Intellectual Property- Copy Rights", Trade Marks, and Patents, Cengage Learning, 2012.
5. V. S. Datey, "Taxman Publication", 21st Edition, 2009.

SEMESTER - II

PRODUCTION & OPERATIONS MANAGEMENT

C	M
2	100

- COURSE OBJECTIVE:** To understand the production function, Design of Product, Planning functions, Material Planning and Layout and Scheduling.
- COURSE OUTCOME:** Effective Forecasting of Production functions, Enhanced Planning of Product Design and Service Operations. Facility Planning and Project Management.

- UNIT I INTRODUCTION TO PRODUCTION AND OPERATIONS MANAGEMENT -** Production Systems – Nature, Importance and organizational function. Characteristics of Modern Production and Operations function. Organisation of Production function. Recent Trends in Production and Operations Management. Role of Operations in Strategic Management. Production and Operations strategy – Elements and Competitive Priorities. Nature of International Operations Management.
- UNIT II FORECASTING, CAPACITY AND AGGREGATE PLANNING -** Demand Forecasting – Need, Types, Objectives and Steps. Overview of Qualitative and Quantitative methods. Capacity Planning – Long range, Types, Rough cut plan, Capacity Requirements Planning (CRP), Developing capacity alternatives. Aggregate Planning – Approaches, costs, relationship to Master Production schedule. Overview of MRP, MRP II and ERP
- UNIT III DESIGN OF PRODUCT, SERVICE AND WORK SYSTEMS -** Product Design – Influencing factors, Approaches, Legal, Ethical and Environmental issues. Process – Planning, Selection, Strategy, Major Decisions. Service Operations – Types, Strategies, Scheduling (Multiple resources and cyclical scheduling). Work Study – Objectives, Procedure. Method Study and Motion Study. Work Measurement and Productivity – Measuring Productivity and Methods to improve productivity.
- UNIT IV MATERIALS MANAGEMENT -** Materials Management – Objectives, Planning, Budgeting and Control. Overview of Materials Management Information Systems (MMIS). Purchasing – Objectives, Functions, Policies, Vendor rating and Value Analysis. Stores Management – Nature, Layout, Classification and Coding. Inventory – Objectives, Costs and control techniques. Overview of JIT.
- UNIT V PROJECT AND FACILITY PLANNING -** Project Management – Scheduling Techniques, PERT, CPM, Crashing CPM networks – Simple Problems. Facility Location – Theories, Steps in Selection, Location Models – Simple Problems. Facility Layout – Principles, Types, Planning tools and techniques.

TEXT BOOKS:

1. Aswathappa K and Shridhara Bhat K, "Production and Operations Management", Himalaya Publishing House, 6th Edition, 2010.
2. Pannerselvam R, "Production and Operations Management", Prentice Hall India, 3rd Edition, 2013.

3. Norman Gaither and Gregory Frazier, "Operations Management", South Western Cengage Learning, 2006.

REFERENCE BOOKS:

1. Kanishka Bedi, "Production and Operations Management", Oxford University Press, 2007.
2. Russel and Taylor, "Operations Management", Wiley, 7th Edition, 2010.
3. Chary S. N, "Production and Operations Management", Tata McGraw Hill, 5th Edition, 2008.
4. Chase Jacobs, Aquilano & Agarwal., "Operations Management", Tata McGraw Hill, 11th edition, 2006.
5. Mahadevan B, "Operations Management Theory and practice", Pearson Education, 2nd edition, 2010.

MARKETING MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Marketing concepts, Marketing Strategies, Buyer Behavior, and Marketing Trends.

COURSE OUTCOME: Better formulation of Marketing Strategies, Marketing Mix Decisions, Customer Relationships and Enhanced Advertising of Products.

UNIT I INTRODUCTION - Marketing – Definitions - Conceptual frame work – Marketing environment: Internal and External - Marketing interface with other functional areas – Production, Finance, Human Relations Management, Information System. Marketing in global environment – Prospects and Challenges.

UNIT II MARKETING STRATEGY - Marketing strategy formulations – Key Drivers of Marketing Strategies - Strategies for Industrial Marketing – Consumer Marketing — Services marketing – Competitor analysis - Analysis of consumer and industrial markets – Strategic Marketing Mix components.

UNIT III MARKETING MIX DECISIONS - Product planning and development – Product life cycle – New product Development and Management – Market Segmentation – Targeting and Positioning – Channel Management – Advertising and sales promotions – Pricing Objectives, Policies and methods.

UNIT IV BUYER BEHAVIOUR - Understanding industrial and individual buyer behavior - Influencing factors – Buyer Behaviour Models – Online buyer behaviour - Building and measuring customer satisfaction –

Customer relationships management – Customer acquisition, Retaining, Defection.

UNIT V MARKETING RESEARCH & TRENDS IN MARKETING Marketing Information System – Research Process – Concepts and applications: Product – Advertising – Promotion – Consumer Behaviour – Retail research – Customer driven organizations - Cause related marketing - Ethics in marketing –Online marketing trends.

TEXT BOOKS:

1. Philip Kotler and Kevin Lane, "Marketing Management", PHI 13th Edition, 2008
2. Paul Baisan et al, "Marketing", Oxford University Press, 13th edition, 2008.

REFERENCE BOOKS:

1. Micheal R. Czinkota & Masaaki Kotabe, "Marketing Management", Vikas Thomson Learning, 2nd edition, 2001.
2. Duglas, J. Darymple, "Marketing Management", John Wiley & Sons, 7th edition, 2008.
3. NAG, "Marketing successfully- A Professional Perspective", Macmillan 2008.
4. Boyd Walker, "Marketing Management", McGraw Hill, 5th edition, 2006.
5. Dalvymple, "Marketing Management", Wiley India Pvt Ltd, 2008.
6. Keith Flether, "Marketing Management and Information Technology", Prentice Hall, 1998.

HUMAN RESOURCE MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand the organizations HRM practices, HR planning, Training Activities, Compensation and reward Planning, Performance Appraisal systems.

COURSE OUTCOME: Enhanced Recruitment activities, Better Training and Development programme, Motivated Workforce and reduced Employee Grievances.

UNIT I PERCEPTIVE IN HUMAN RESOURCE MANAGEMENT - Evolution of human resource management – The importance of the human factor – Objectives of human resource management – Inclusive growth and affirmative action -Role of human resource manager – Human resource policies – Computer applications in human

resource management – Human resource accounting and audit.

UNIT II THE CONCEPT OF BEST FIT EMPLOYEE - Importance of Human Resource Planning – Forecasting human resource requirement – Internal and External sources. Selection process screening – Tests - Validation – Interview - Medical examination – Recruitment introduction – Importance – Practices – Socialization benefits.

UNIT III TRAINING AND EXECUTIVE DEVELOPMENT - Types of training methods purpose benefits resistance. Executive development programmes – Common practices - Benefits – Self development – Knowledge management.

UNIT IV SUSTAINING EMPLOYEE INTEREST - Compensation plan – Reward – Motivation – Theories of motivation – Career management – Development of mentor – Protégé relationships.

UNIT V PERFORMANCE EVALUATION AND CONTROL PROCESS - Method of performance evaluation – Feedback – Industry practices. Promotion, Demotion, Transfer and Separation – Implication of job change. The control process – Importance – Methods – Requirement of effective control systems grievances – Causes – Implications – Redressal methods.

TEXT BOOKS:

1. Decenzo and Robbins, "Human Resource Management", Wiley, 11th Edition, 2013.
2. Dessler, "Human Resource Management", Pearson Education Limited, 13th edition, 2007

REFERENCE BOOKS:

1. Mamoria C.B. and Mamoria S., "Personnel Management", Himalaya Publishing Company, 5th edition, 2011
2. Bernadin, "Human Resource Management", Tata Mcgraw Hill, 6th edition 2012.
3. Eugence Mckenna and Nic Beach, "Human Resource Management", Pearson Education Limited, 2nd edition, 2008.
4. Wayne Cascio, "Managing Human Resource", McGraw Hill, 8th edition, 2009.
5. Ivancevich, "Human Resource Management", McGraw Hill, 7th edition, 2010.

COURSE OBJECTIVE: To understand the foundations of Finance and financing decisions, Working Capital and Long term sources of finance.

COURSE OUTCOME: Better Portfolio Management, dividend decisions, Inventory management and long term financing decisions.

UNIT I FOUNDATIONS OF FINANCE - Financial management – An overview- Time value of money- Introduction to the concept of risk and return of a single asset and of a portfolio- Valuation of bonds and shares- Option valuation.

UNIT II INVESTMENT DECISIONS - Capital Budgeting: Principles and techniques - Nature of capital budgeting- Identifying relevant cash flows - Evaluation Techniques: Payback, Accounting rate of return, Net Present Value, Internal Rate of Return, Profitability Index - Comparison of DCF techniques - Project selection under capital rationing - Inflation and capital budgeting - Concept and measurement of cost of capital - Specific cost and overall cost of capital

UNIT III FINANCING AND DIVIDEND DECISION - Financial and operating leverage - capital structure - Cost of capital and valuation - designing capital structure. Dividend policy - Aspects of dividend policy - practical consideration - forms of dividend policy - forms of dividends - share splits.

UNIT IV WORKING CAPITAL MANAGEMENT - Principles of working capital: Concepts, Needs, Determinants, issues and estimation of working capital - Accounts Receivables Management and factoring - Inventory management - Cash management - Working capital finance: Trade credit, Bank finance and Commercial paper.

UNIT V LONG TERM SOURCES OF FINANCE - Indian capital and stock market, New issues market Long term finance: Shares, debentures and term loans, lease, hire purchase, venture capital financing, Private Equity.

TEXT BOOKS:

1. M.Y. Khan and P.K.Jain, "Financial Management", Text, Problems and cases Tata McGraw Hill, 5th edition, 2008.
2. I. M. Pandey, "Financial Management", Vikas Publishing House Pvt. Ltd., 10th edition, 2007.

REFERENCE BOOKS:

1. Aswat Damodaran, "Corporate Finance Theory and practice", John Wiley & Sons, 3rd edition, 2013.
2. James C. Vanhorne, "Fundamentals of Financial Management", PHI Learning, 12th Edition, 2008.
3. Brigham, Ehrhardt, "Financial Management Theory and Practice", 13th edition, Cengage Learning 2010.
4. Prasanna Chandra, "Financial Management", 8th edition, Tata McGraw Hill, 2011.
5. Srivatsava, Mishra, "Financial Management", Oxford University Press, 2nd edition, 2008.

INFORMATION MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand about Information Technology and Information systems, Functional Information systems, DBMS, Disaster Management, Data Mining and Cloud Computing.

COURSE OUTCOME: Better usage of DSS, KMS, Data Warehousing, Intranets, Testing, E- Business, E – Governance.

UNIT I INTRODUCTION - Data, Information, Intelligence, Information Technology, Information System, evolution, types based on functions and hierarchy, Functional Information Systems, DSS, EIS, KMS, GIS, International Information System.

UNIT II SYSTEMS ANALYSIS AND DESIGN - Systems development methodologies, Systems Analysis and Design Tools – System flow chart, Decision table, DFD, ER, Object oriented Analysis and Design, UML diagram.

UNIT III DATABASE MANAGEMENT SYSTEMS - DBMS – HDBMS, NDBMS, RDBMS, OODBMS, Query Processing, SQL, Concurrency Management, Data warehousing and Data Mart

UNIT IV SECURITY, CONTROL AND REPORTING - Security, Testing, Error detection, Controls, IS Vulnerability, Disaster Management, Computer Crimes, Securing the Web, Intranets and Wireless Networks, Software Audit, Ethics in IT, User Interface and reporting.

UNIT V NEW IT INITIATIVES - Role of information management in ERP, e-business, e-governance, Data Mining, Business Intelligence, Pervasive Computing, Cloud computing, CMM.

TEXT BOOKS:

1. Robert Schultheis and Mary Summer, "Management Information Systems – The Managers View", Tata McGraw Hill, 2008.
2. Kenneth C. Laudon and Jane Price Laudon, "Management Information Systems – Managing the digital firm", PHI Learning / Pearson Education, PHI, Asia, 2002.

REFERENCE BOOKS:

1. Gordon Davis, "Management Information System: Conceptual Foundations, Structure and Development", Tata McGraw Hill, 7th edition, 2006.
2. Haag, Cummings and Mc Cubbrey, "Management Information Systems for the Information Age", McGraw Hill, 2012.
3. Turban, McLean and Wetherbe, "Information Technology for Management – Transforming Organisations in the Digital Economy", John Wiley, 6th edition, 2009.
4. Raymond McLeod and Jr. George P. Schell, "Management Information Systems", Pearson Education, 2007.
5. James O Brien, "Management Information Systems – Managing Information Technology in the E-business enterprise", Tata McGraw Hill, 2010.
6. Corey Schou and Dan Shoemaker, "Information Assurance for the Enterprise – A Roadmap to Information Security", Tata McGraw Hill, 2007.
7. Frederick Gallegor, Sandra Senft, Daniel P. Manson and Carol Gonzales, "Information Technology Control and Audit", Auerbach Publications, 4th edition, 2012.

QUALITY MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand about Quality, Contributions of Quality gurus, Six sigma, BPR, Tools used for Quality Management and Quality systems.

COURSE OUTCOME: Enhanced Quality Products with higher customer Satisfaction. Better use of different tools used to enhance Quality.

UNIT I INTRODUCTION TO QUALITY MANAGEMENT - Definitions – TOM framework, benefits, awareness and obstacles. Quality – vision, mission and policy statements. Customer Focus – customer perception of quality, Translating needs into requirements, customer retention. Dimensions of product and service quality. Cost of quality.

- UNIT II PRINCIPLES AND PHILOSOPHIES OF QUALITY MANAGEMENT** - Overview of the contributions of Deming, Juran Crosby, Masaaki Imai, Feigenbaum, Ishikawa, Taguchi techniques – introduction, loss function, parameter and tolerance design, signal to noise ratio. Concepts of Quality circle, Japanese 5S principles and 8D methodology.
- UNIT III STATISTICAL PROCESS CONTROL AND PROCESS CAPABILITY** - Meaning and significance of statistical process control (SPC) – construction of control charts for variables and attributed. Process capability – meaning, significance and measurement – Six sigma concepts of process capability. Reliability concepts – definitions, reliability in series and parallel, product life characteristics curve. Total productive maintenance (TMP) – relevance to TQM, Terotechnology. Business process reengineering (BPR) – principles, applications, reengineering process, benefits and limitations.
- UNIT IV TOOLS AND TECHNIQUES FOR QUALITY MANAGEMENT** - Quality functions development (QFD) – Benefits, Voice of customer, information organization, House of quality (HOQ), building a HOQ, QFD process. Failure mode effect analysis (FMEA) – requirements of reliability, failure rate, FMEA stages, design, process and documentation. Seven old (statistical) tools. Seven new management tools. Benchmarking and POKA YOKE.
- UNIT V QUALITY SYSTEMS ORGANIZING AND IMPLEMENTATION** - Introduction to IS/ ISO 9004:2000 – quality management systems – guidelines for performance improvements. Quality Audits. TQM culture, Leadership – quality council, employee involvement, motivation, empowerment, recognition and reward.

TEXT BOOKS:

1. Dale H. Besterfeld et al, "Total Quality Management", Third edition, Pearson Education (First Indian Reprints 2004).
2. Shridhara Bhat K, "Total Quality Management – Text and Cases", Himalaya Publishing House, First Edition 2010.

REFERENCE BOOKS:

1. Douglas C. Montgomery, "Introduction to Statistical Quality Control", Wiley Student Edition, 7th Edition, Wiley India Pvt Limited, 2012.
2. James R. Evans and William M. Lindsay, "The Management and Control of Quality", Sixth Edition, Thomson, 2010.
3. Poornima M. Charantimath, "Total Quality Management", Pearson Education, 2nd edition, 2012.
4. "Indian standard – quality management systems – Guidelines for

performance Improvement" Fifth Revision, Bureau of Indian standards, New Delhi.

BUSINESS RESEARCH METHODS

C	M
4	100

COURSE OBJECTIVE: To understand about the Research Process, Design and Measurement, Data Collection Techniques and Report Writing.

COURSE OUTCOME: Better Research Process, Data Preparation, Analysis and Report writing.

UNIT I INTRODUCTION - Business Research – Definition and Significance – the research process – Types of Research – Exploratory and causal Research – Theoretical and empirical Research – Cross –Sectional and time – series Research – Research questions / Problems – Research objectives – Research hypotheses – characteristics – Research in an evolutionary perspective – the role of theory in research.

UNIT II RESEARCH DESIGN AND MEASUREMENT - Research design – Definition – types of research design – exploratory and causal research design – Descriptive and experimental design – different types of experimental design – Validity of findings – internal and external validity – Variables in Research – Measurement and scaling – Different scales – Construction of instrument – Validity and Reliability of instrument.

UNIT III DATA COLLECTION - Types of data – Primary Vs Secondary data – Methods of primary data collection – Survey Vs Observation – Experiments – Construction of questionnaire and instrument – Validation of questionnaire – Sampling plan – Sample size – determinants optimal sample size – sampling techniques – Probability Vs Non–probability sampling methods.

UNIT IV DATA PREPARATION AND ANALYSIS - Data Preparation – editing – Coding –Data entry – Validity of data – Qualitative Vs Quantitative data analyses – Bivariate and Multivariate statistical techniques – Factor analysis – Discriminant analysis – cluster analysis – multiple regression and correlation – multidimensional scaling – Application of statistical software for data analysis.

UNIT V REPORT DESIGN, WRITING AND ETHICS IN BUSINESS RESEARCH - Research report – Different types – Contents of report – need of executive summary – chapterization – contents of chapter – report

writing – the role of audience – readability – comprehension – tone – final proof – report format – title of the report – ethics in research – ethical behaviour of research – subjectivity and objectivity in research.

TEXT BOOKS:

1. Donald R. Cooper and Pamela S. Schindler, "Business Research methods", 12th Edition, Tata Mc Graw Hill, 2010.
2. Alan Bryman and Emma Bell, "Business Research methods", Oxford University Press, New Delhi, 3rd edition, 2011.
3. Uma Sekaran, "Research methods for Business", Wiley India, New Delhi, 2010.
4. K. N. Krishnaswamy, Appa Iyer Sivakumar and M. Mathirajan, "Management Research Methodology", Pearson Education, New Delhi, 2009.

**HEALTH SERVICES MANAGEMENT /
HOSPITALITY AND TOURISM MANAGEMENT**

SEMESTER – II

SERVICES QUALITY MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To learn the quality philosophies and tools in the services perspective.

COURSE OUTCOME: To apply quality philosophies and tools in hospitality services.

UNIT I INTRODUCTION TO QUALITY MANAGEMENT - Quality – vision, mission and policy statements. Customer Focus - Part of Customer focus – customer perception of quality, Translating needs into requirements, customer retention. Dimensions of service quality. Cost of services quality.

UNIT II CONCEPTS OF SERVICES QUALITY - Definitions of Service Quality and its Significance -Measuring Service Quality -Service Quality Gap Model - Service Quality Standards - Strategies for Improving Service Quality - Monitoring Service Quality. Concepts of Quality circle, Japanese 5S principles applicable to services.

UNIT III APPLYING STATISTICAL PROCESS CONTROL TO SERVICES - Statistical process control (SPC) – application of SPC to services. Six sigma for services. Reliability concepts – definitions, reliability in series and parallel, product life characteristics curve. Business process

Improvement (BPI) – principles, applications, process, benefits and limitations.

UNIT IV TOOLS AND TECHNIQUES FOR SERVICE QUALITY - Quality functions development (QFD) – Benefits, Voice of customer, information organization, House of quality (HOQ), building a HOQ, QFD process. Applying the seven old and new tools for service quality. Benchmarking in services, FMEA.

UNIT V QUALITY SYSTEMS IMPLEMENTATION FOR SERVICES - ISO certification for services – quality management systems – guidelines for performance improvements. Quality Audits – Walkthrough audits. TQM culture –Leadership, quality council, employee involvement, motivation, empowerment, recognition and reward – TQM framework, benefits, awareness and obstacles.

TEXT BOOKS:

1. Dale H.Besterfield, Carol Besterfield – Michna, Glen H. Besterfield, Mary Besterfield – Sacre, Hermant – Urdhwarshie, Rashmi Urdhwarshie, Total Quality Management, Revised Third edition, Pearson Education, 2011
2. Shridhara Bhat K, Total Quality Management – Text and Cases, Himalaya Publishing House, First Edition 2002.

REFERENCE BOOKS:

1. Indian standard – quality management systems – Guidelines for performance improvement (Fifth Revision), Bureau of Indian standards, New Delhi.
2. Valarie A Zeithmal and Parasuraman, Service Quality, Marketing Science Institute, Massachusetts.
3. M. Raghavachari & KV Ramani, Delivering Service Quality: Managerial Challenges for 21st Century, Macmillan Publishers India, Third Edition 2011.

GENERAL MANAGEMENT

SEMESTER – III

APPLIED OPERATIONS RESEARCH

C	M
4	100

COURSE OBJECTIVE: Students learn about linear programming and extensions of LP models and the optimization algorithms. Helps students learn the replacement

model, sequencing problems and processing of 'n' jobs through 'm' machines.

COURSE OUTCOME: Enable students to make decisions under conditions of certainty and uncertainty. Improves the ability to formulate effective models for real world OR problems.

UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP) - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.

UNIT II LINEAR PROGRAMMING EXTENSIONS - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.

UNIT III INTEGER LINEAR PROGRAMMING AND GAME THEORY - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.

UNIT IV INVENTORY MODELS, SIMULATION AND DECISION THEORY - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.

UNIT V QUEUING THEORY AND REPLACEMENT MODELS - Queuing Theory - single and Multi-channel models – infinite number of customers and infinite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

TEXT BOOKS:

1. Paneerselvam R., "Operations Research", Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, "Operations

- Research", Pearson Education, First Indian Reprint, 2012.
- Hamdy A Taha, "Introduction to Operations Research", Prentice Hall India, 9th Edition, Third Indian Reprint 2010.

REFERENCE BOOKS:

- Sankara Iyer P, "Operations Research", Tata Mcgraw Hill, 2008.
- Frederick & Mark Hillier, "Introduction to Management Science – A Modeling and case studies approach with spreadsheets", Tata Mcgraw Hill, 3rd edition, 2007.
- Gupta P.K, Hira D.S, "Problem in Operations Research", S.Chand and Co, 2010.
- Kalavathy S, "Operations Research", 3rd Edition, Vikas Publishing House, 2013.
- Richard Broson , Govindasamy & Naachimuthu , "Operations Research", Schaum's outline series, II Edition, 2000.

INTERNATIONAL BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Students become familiar with the theoretical background of international business. To understand the economic, cultural and ethical issues relating to international business.

COURSE OUTCOME: Enable students to apply theory it in a variety of ways to varied international business situations, formulate frameworks for complex cross-border decision making

UNIT I INTRODUCTION - International Business –Definition – Internationalizing business-Advantages –factors causing globalization of business- international business environment – country attractiveness –Political, economic and cultural environment – Protection Vs liberalization of global business environment.

UNIT II INTERNATIONAL TRADE AND INVESTMENT - Promotion of global business – the role of GATT/WTO – multilateral trade negotiation and agreements – VIII & IX, round discussions and agreements – Challenges for global business –global trade and investment – theories of international trade and theories of international investment – Need for global competitiveness – Regional trade block – Types – Advantages and disadvantages – RTBs across the globe – brief history.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT - Strategic compulsions- Standardization Vs Differentiation – Strategic options – Global portfolio management- global entry strategy – different forms of international business – advantages- organizational issues of international business – organizational structures – controlling of international business – approaches to control – performance of global business-performance evaluation system.

UNIT IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS - Global production –Location –scale of operations- cost of production – Make or Buy decisions – global supply chain issues – Quality considerations- Globalization of markets, marketing strategy – Challenges in product development , pricing, production and channel management- Investment decisions – economic- Political risk – sources of fund- exchange – rate risk and management – strategic orientation – selection of expatriate managers- Training and development – compensation.

UNIT V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT - Disadvantages of international business – Conflict in international business- Sources and types of conflict – Conflict resolutions – Negotiation – the role of international agencies –Ethical issues in international business – Ethical decision-making.

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, “International Business”, 6th edition, Tata Mc Graw Hill, 2009.
2. John D. Daniels and Lee H. Radebaugh, “International Business”, Pearson Education Asia, New Delhi, 13th edition, 2010.
3. K. Aswathappa, “International Business”, Tata Mc Graw Hill, 2008.
4. Michael R. Czinkota, Ilkka A. Ronkainen and Michael H. Moffet, “International Business”, Thomson, Bangalore, 8th edition, 2009.
5. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, “International Management”, Tata Mc Graw Hill, 2nd edition, 2008.
6. Oded Shenkar and Yaong Luo, “International Business”, John Wiley Inc, Noida, 2nd edition, 2007.

STRATEGIC MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Strategic Management, Globalisation, Competitive Advantage, Implementation Strategies, Evaluation and Issues of Non-Profit Organisations.

COURSE OUTCOME: Enhanced strategy formulations, Strategy implementations, evaluation procedures, New Business Models.

UNIT I STRATEGY AND PROCESS - Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.

UNIT II COMPETITIVE ADVANTAGE - External Environment - Porter's Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution- Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage-Case study.

UNIT III STRATEGIES - The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy-Strategy in the Global Environment-Corporate Strategy-Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation-Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - McKinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.

UNIT IV STRATEGY IMPLEMENTATION & EVALUATION - The implementation process, Resource allocation, Designing organisational structure-Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.

UNIT V OTHER STRATEGIC ISSUES - Managing Technology and Innovation-Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study

TEXT BOOKS:

1. Thomas L. Wheelen, J.David Hunger and Krish Rangarajan, "Strategic Management and Business policy", Pearson Education., 11th edition, 2007
2. Charles W.L.Hill & Gareth R.Jones, "Strategic Management Theory - An

- Integrated approach", Biztantra, Wiley India, 6th edition, 2007.
- Azhar Kazmi, "Strategic Management & Business Policy", Tata McGraw Hill, Third Edition, 2008.

REFERENCE BOOKS:

- Fred.R.David, "Strategic Management and cases", PHI Learning, 13th edition, 2010.
- Upendra Hachru , "Strategic Management concepts & cases", Excel Books, 8th edition, 2006.
- Adriau H Aberberg and Alison Rieple, "Strategic Management Theory & Application", Oxford University Press, 2008.
- Arnoldo C.Hax and Nicholas S. Majluf, "The Strategy Concept and Process – A Pragmatic Approach", Pearson Education, Second Edition, 2005.
- Harvard Business Review, "Business Policy – part I & II", Harvard Business School.
- Saloner and Shepard, Podolny, "Strategic Management", John Wiley, 2005.
- Lawrence G. Hrebiniak, "Making strategy work", Pearson, 2005.
- Gupta, Gollakota and Srinivasan, "Business Policy and Strategic Management – Concepts and Application", Prentice Hall of India, 2nd edition, 2007.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE: To understand about ERP systems, ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

COURSE OUTCOME: Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP systems.

UNIT I INTRODUCTION - Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems

UNIT II ERP SOLUTIONS AND FUNCTIONAL MODULES - Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.

- UNIT III ERP IMPLEMENTATION** - Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.
- UNIT IV POST IMPLEMENTATION** Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation
- UNIT V EMERGING TRENDS ON ERP** - Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics etc- Future trends in ERP systems- web enabled, Wireless technologies so on.

TEXT BOOKS:

1. Alexis Leon, “ERP demystified”, second Edition Tata McGraw-Hill, 2007.

REFERENCE BOOKS:

1. Jagan Nathan Vaman, “ERP in Practice”, Tata McGraw-Hill, 2008
2. Alexis Leon, “Enterprise Resource Planning”, second edition, Tata McGraw-Hill, 2008.
3. Mahadeo Jaiswal and Ganesh Vanapalli, “ERP”, Macmillan India, 2009.
4. Vinod Kumar Grag and N.K. Venkitakrishnan, “ERP- Concepts and Practice”, Prentice Hall of India, 2nd edition, 2006.
5. Summer, “ERP”, Pearson Education, 2008.

INTEGRATED MARKETING COMMUNICATIONS

C	M
2	100

COURSE OBJECTIVE: This course introduces students to the basic concepts of marketing communication which includes advertising and sales promotion and how business organisations and other institutions carry out such activities.

COURSE OUTCOME: Insight into the importance of marketing communications planning and objective setting in relation to consumer decision making processes.

UNIT I INTRODUCTION TO ADVERTISEMENT -Concept and definition of advertisement – Social, Economic and Legal Implications of advertisements – setting advertisement objectives – Ad. Agencies – Selection and remuneration – Advertisement campaigns.

UNIT II ADVERTISEMENT MEDIA - Media plan – Type and choice criteria –

Reach and frequency of advertisements – Cost of advertisements - related to sales – Media strategy and scheduling.

UNIT III DESIGN AND EXECUTION OF ADVERTISEMENTS - Message development – Different types of advertisements – Layout – Design appeal – Copy structure – Advertisement production – Print – Radio. T.V. and Web advertisements – Media Research – Concept Testing– Measuring impact of advertisements.

UNIT IV INTRODUCTION TO SALES PROMOTION - Scope and role of sale promotion – Definition – Objectives of sales promotion - sales promotion techniques – Trade oriented and consumer oriented.

UNIT V SALES PROMOTION CAMPAIGN - Sales promotion – Requirement identification – Designing of sales promotion campaign – Involvement of salesmen and dealers – Out sourcing sales promotion national and international promotion strategies – Integrated promotion – Coordination within the various promotion techniques – Online sales promotions

TEXT BOOKS:

1. Semenile, Allen, O'Guinn, Kaufman, "Advertising and Sales Promotions – An Integrated Brand Approach", 6th edition, Cengage Learning. (2012).
2. Kenneth Clow. Donald Baack, "Integrated Advertisements, Promotion and Marketing Communication", Prentice Hall of India, New Delhi, 6th edition, 2013.

REFERENCE BOOKS:

1. S. H. H. Kazmi and Satish K Batra, "Advertising & Sales Promotion", Excel Books, New Delhi, 2nd edition, 2008.
2. George E Belch and Michel A Belch, "Advertising & Promotion", McGraw Hill, Singapore, 7th edition, 2011.
3. Julian Cummings, "Sales Promotion", Kogan Page, London 2003.
4. E. Betch and Michael, "Advertising and Promotion", McGraw Hill, 7th edition, 2003.
5. Jaishri Jefhwaney, "Advertising Management", Oxford, 2013.
6. V.S.Padmanabhan, H.S.Murthy. "Advertising and Sales Promotion" (An Indian Perspective), Anes Books Pvt.Ltd -2011.

CONSUMER BEHAVIOR

C	M
2	100

COURSE OBJECTIVE: To understand the role of consumer behavior in marketing and to identify qualitative and quantitative methods of measuring consumer behavior.

COURSE OUTCOME: The student will understand the influences on customer choice and the process of human decision making in a marketing context.

UNIT I INTRODUCTION - Concepts – Significance – Dimensions of Consumer Behavior – Application of knowledge of Consumer Behaviour in marketing decisions.

UNIT II CONSUMER BEHAVIOR MODELS - Industrial and individual consumer behaviour models - Howard- Sheth, Engel – Kollat, Webster and Wind Consumer Behaviour Models – Implications of the models on marketing decisions.

UNIT III INTERNAL INFLUENCES - Psychological Influences on consumer behavior – motivation – perception – personality Learning and Attitude- Self Image and Life styles – Consumer expectation and satisfaction.

UNIT IV EXTERNAL INFLUENCES - Socio-Cultural, Cross Culture - Family group – Reference group – Communication -Influences on Consumer behavior

UNIT V PURCHASE DECISION PROCESS - High and low involvement - Pre-purchase and post-purchase behavior – Online purchase decision process – Diffusion of Innovation – Managing Dissonance - Emerging Issues.

TEXT BOOKS:

1. Leon G. Schiffman and Leslie Lasar Kanuk, “Consumer Behavior”, Pearson Education, India, 2013.
2. Paul Peter et al., “Consumer Behavior and Marketing Strategy”, Tata McGraw Hill, Indian Edition, 7th Edition 2005.

REFERENCE BOOKS:

1. Frank R. Kardes, “Consumer Behaviour and Managerial Decision Making”, 2nd Edition, 2010.
2. Assel, “Consumer Behavior - A Strategic Approach”, Biztranza, 2008.
3. Sheth Mittal, “Consumer Behavior- A Managerial Perspective”, Thomson Asia (P) Ltd., 2011.
4. Abbael, “Consumer Behavior: A Strategic Approach” (Indian Edition

- 2005) Wiley 2012.
5. Hed, Hoyer, "Consumer Behavior", 2008 Edition Wiley 2012.
 6. Das Gupta, "Consumer Behavior", 2008 Edition, Wiley 2012.
 7. Shri Prakash, "Theory of Consumer Behavior", 1st Edition, Vikas 2012.
 8. Srabanti Mukherjee, "Consumer Behavior", Cengage Learning, 2012.

TRAINING AND DEVELOPMENT

C	M
2	100

COURSE OBJECTIVE: To know the role and function of training and development organization, learning theories, and principles and their implications for the effectiveness of training programs

COURSE OUTCOME: Develop the skills, abilities, and practical elements of employee development and performance improvement in organization and application of various and appropriate methods and techniques for identifying training needs.

UNIT I INTRODUCTION - Training, Development and Performance consulting – Design of HRD systems – Development of HRD strategies – Learning and Learning organizations – Training Policies – organizational climate for training and development – a system model.

UNIT II TRAINING NEEDS ANALYSIS - Objectives of training needs analysis - Identification of training needs and the process, tools and techniques – organizational analysis, task analysis and individual analysis – consolidation.

UNIT III DESIGN OF TRAINING PROGRAMS - Linking training needs and objectives of various theories of learning and methods of training – Learning cycles – factors for fixing duration – selection of participants – choice of trainers – course contents – inhouse arrangements and outsourcing – E learning – training for trainers.

UNIT IV DELIVERING THE TRAINING PROGRAMS - Conducting the programs – ice breaking and games – relevance of culture of participants – layout facilitating interactions – audio visual aids.

UNIT V EVALUATION OF TRAINING PROGRAMS - Objectives of evaluation – micro and macro levels – methods of evaluation – reaction, learning, behavior and results – Cost benefit analysis – Role of trainer and line manager in evaluations – Design of Evaluation – Kirkpatrick's model

REFERENCE BOOKS:

1. "Human Resources Development – Theory and Practice", Tapomoy Deb Ane Books India, (2008)
2. James. S. Pepitone, "Human performance consulting", Guelly publishing Company, Houston, 2006
2. Stimson N, "How to write and prepare training materials", Kogan page, 2nd edition, 2002
3. "Journals of Indian Society for Training and Development", New Delhi, 2010.

GENERAL MANAGEMENT

SEMESTER – IV

INDUSTRIAL RELATIONS AND LABOUR WELFARE

C	M
2	100

COURSE OBJECTIVE: To explore contemporary knowledge and gain a conceptual understanding of industrial relations and human resource management.

COURSE OUTCOME: Students will know how to manage work place conflict and they understand how to resolve industrial relations and human resource problems.

UNIT I **INDUSTRIAL RELATIONS** - Concepts – Importance – Industrial Relations problems in the Public Sector – Growth of Trade Unions – Codes of conduct.

UNIT II **INDUSTRIAL CONFLICTS** - Disputes – Impact – Causes – Strikes – Prevention – Industrial Peace – Government Machinery – Conciliation – Arbitration – Adjudication.

UNIT III **LABOUR WELFARE** - Concept – Objectives – Scope – Need – Voluntary Welfare Measures – Statutory Welfare Measures – Labour – Welfare Funds – Education and Training Schemes.

UNIT IV **INDUSTRIAL SAFETY** - Causes of Accidents – Prevention – Safety Provisions – Industrial Health and Hygiene – Importance – Problems – Occupational Hazards – Diseases – Psychological problems – Counseling – Statutory Provisions.

UNIT V **WELFARE OF SPECIAL CATEGORIES OF LABOUR** - Child Labour – Female Labour – Contract Labour – Construction Labour – Agricultural Labour – Differently abled Labour – BPO & KPO Labour - Social Assistance – Social Security – Implications.

TEXT BOOKS:

1. Mamoria C.B. and Sathish Mamoria, "Dynamics of Industrial Relations", Himalaya Publishing House, New Delhi, 2010.
2. Arun Monappa, Ranjeet Nambudiri, Patturaja Selvaraj, "Industrial Relations & Labour Laws", Tata McGraw Hill. 2012

REFERENCE BOOKS:

1. Ratna Sen, "Industrial Relations in India", Shifting Paradigms, Macmillan India Ltd., New Delhi, 2009.
2. C.S.Venkata Ratnam, "Globalisation and Labour Management Relations", Response Books, 2010.
3. Srivastava, "Industrial Relations and Labour Laws", Vikas, 6th edition, 2012.
4. P. N. Singh, Neeraj Kumar, "Employee Relations Management", Pearson. 2011.
5. P.R.N Sinha, Indu Bala Sinha, Seema Priyadarshini Shekhar, "Industrial Relations, Trade Unions and Labour Legislation", Pearson., 4th edition, 2013

STRATEGIC INVESTMENT AND FINANCING DECISIONS

C	M
2	100

COURSE OBJECTIVES: Enable students to acquire techniques of evaluating strategic investment decisions understand the causes of prediction modes of financial distress

COURSE OUTCOME: Possess good knowledge in techniques for making strategic investment decision and tackling financial distress

UNIT I INVESTMENT DECISIONS - Project Investment Management Vs Project Management – Introduction to profitable projects – evaluation of Investment opportunities – Investment decisions under conditions of uncertainty – Risk analysis in Investment decision – Types of investments and disinvestments.

UNIT II CRITICAL ANALYSIS OF APPRAISAL TECHNIQUES - Significance of Information and data bank in project selections – Investment decisions under capital constraints – capital rationing, Portfolio – Portfolio risk and diversified projects.

UNIT III STRATEGIC ANALYSIS OF SELECTED INVESTMENT DECISIONS - Lease fi

ancing – Lease Vs Buy decision – Hire Purchase and installment decision – Hire Purchase Vs Lease Decision – Mergers and acquisition – Cash Vs Equity for mergers.

UNIT IV FINANCING DECISIONS - Capital Structure – Capital structure theories – Capital structure planning in Practice.

UNIT V FINANCIAL DISTRESS - Consequences, Issues, Bankruptcy, Settlements, reorganization and Liquidation in bankruptcy.

TEXT BOOKS:

1. Prasanna Chandra, "Financial Management", 9th Edition, Tata McGraw Hill, 2012.
2. Prasanna Chandra, "Projects : planning, Analysis, Financing implementation and review", TMH, New Delhi, 2011.

REFERENCE BOOKS:

1. Bodie, Kane, "Marcus: Investment", Tata McGraw Hill, New Delhi 2010.
2. Brigham E. F & Houston J.F., "Financial Management", Thomson Publications, 9th edition, 2010.
3. I. M. Pandey, "Financial Management", Vikas Publishing House, 10th edition, 2010.
4. M. Y. Khan and P. K. Jain, "Financial Management Text and Problems", Tata McGraw Hill Publishing Co, 2011.
5. Website of IDBI Related to Project Finance.

INDIAN BANKING FINANCIAL SYSTEM

C	M
2	100

COURSE OBJECTIVES: Grasp how banks raise their sources and how they deploy it and manage the associated risks. Understand e-banking and the threats that go with it.

COURSE OUTCOMES: Price various types of loans proposed by banks to various prospective borrowers with different risk profiles and evaluate the performance of banks.

UNIT I OVERVIEW OF INDIAN BANKING SYSTEM - Overview of Indian Banking System, Functions of banks, key Acts governing the functioning of Indian banking system – RBI Act 1934, Negotiable Instruments Act 1881, Banking Regulations Act 1948 – Rights and obligations of a banker, Overview of Financial statement of banks – Balance sheet and Income Statement.

UNIT II SOURCES AND APPLICATION OF BANK FUNDS - Capital adequacy, Deposits and non-deposit sources, Designing of deposit schemes

and pricing of deposit services, application of bank funds – Investments and Lending functions, Types of lending – Fund based, non-fund based, asset based – Different types of loans and their features, Major components of a typical loan policy document, Steps involved in Credit analysis, Credit delivery and administration, Pricing of loans, Customer profitability analysis.

UNIT III CREDIT MONITORING AND RISK MANAGEMENT - Need for credit monitoring, Signals of borrowers' financial sickness, Financial distress prediction models – Rehabilitation process, Risk management – Interest rate, liquidity, forex, credit, market, operational and solvency risks – risk measurement process and mitigation, Basic understanding of NPAs and ALM.

UNIT IV MERGERS, DIVERSIFICATION AND PERFORMANCE EVALUATION - Mergers and Diversification of banks into securities market, underwriting, Mutual funds and Insurance business, Risks associated therewith. Performance analysis of banks – background factors, ratio analysis and CAMELS.

UNIT V E-BANKING - Payment system in India – Paper based, e-payments – Electronic banking – advantages – Plastic money, E-money – Forecasting of cash demand at ATMs – Security threats in e-banking and RBI's initiatives.

TEXT BOOKS:

1. Padmalatha Suresh and Justin Paul, "Management of Banking and Financial Services", Pearson, Delhi, 2012.
2. Meera Sharma, "Management of Financial Institutions – with emphasis on Bank and Risk Management", PHI Learning Pvt. Ltd., New Delhi, 2010.

REFERENCE BOOKS:

1. Peter S. Rose and Sylvia C. and Hudgins, "Bank Management and Financial Services", Tata McGraw Hill, New Delhi, 2012.

SUPPLY CHAIN MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To help understand the importance of and major decisions in supply chain management for gaining competitive advantage.

COURSE OUTCOME: Ability to build and manage a competitive supply chain using Strategies, models, techniques and information technology.

- UNIT I** **INTRODUCTION** - Supply Chain – Fundamentals –Evolution- Role in Economy - Importance - Decision Phases - Supplier- Manufacturer-Customer chain. - Enablers/ Drivers of Supply Chain Performance. Supply chain strategy - Supply Chain Performance Measures.
- UNIT II** **STRATEGIC SOURCING** - Outsourcing – Make Vs buy - Identifying core processes - Market Vs Hierarchy - Make Vs buy continuum - Sourcing strategy - Supplier Selection and Contract Negotiation. Creating a world class supply base- Supplier Development - World Wide Sourcing.
- UNIT III** **SUPPLY CHAIN NETWORK** - Distribution Network Design – Role - Factors Influencing Options, Value Addition – Distribution Strategies - Models for Facility Location and Capacity allocation. Distribution Center Location Models. Supply Chain Network optimization models. Impact of uncertainty on Network Design - Network Design decisions using Decision trees.
- UNIT IV** **PLANNING DEMAND, INVENTORY AND SUPPLY** - Managing supply chain cycle inventory. Uncertainty in the supply chain – Analysing impact of supply chain redesign on the inventory - Risk Pooling - Managing inventory for short life - cycle products -multiple item - multiple location inventory management. Pricing and Revenue Management
- UNIT V** **CURRENT TRENDS** - Supply Chain Integration - Building partnership and trust in SC Value of Information: Bullwhip Effect - Effective forecasting - Coordinating the supply chain. . SC Restructuring - SC Mapping -SC process restructuring, Postpone the point of differentiation – IT in Supply Chain - Agile Supply Chains -Reverse Supply chain. Agro Supply Chains.

TEXT BOOKS:

1. Janat Shah, "Supply Chain Management – Text and Cases", Pearson Education, 5th edition, 2012.
2. Sunil Chopra and Peter Meindl, "Supply Chain Management-Strategy Planning and Operation", PHI Learning / Pearson Education, 5th edition, 2012.

REFERENCE BOOKS:

1. Ballou Ronald H, "Business Logistics and Supply Chain Management", Pearson Education, 5th edition, 2013.
2. David Simchi-Levi, Philip Kaminsky, Edith Simchi-Levi, "Designing and Managing the Supply Chain: Concepts, Strategies, and Cases", Tata McGraw-Hill,3rd edition, 2007.
3. Altekar Rahul V, "Supply Chain Management-Concept and Cases",

- PHI, 3rd edition, 2005.
4. Shapiro Jeremy F, "Modeling the Supply Chain", Thomson Learning, Second Reprint , 2013.
 5. Joel D. Wisner, G. Keong Leong, Keah-Choon Tan, "Principles of Supply Chain Management- A Balanced Approach", South-Western, Cengage Learning, 3rd edition, 2011.

MATERIALS MANAGEMENT

C	M
2	100

COURSE OBJECTIVES: Understand how material management should be considered for profitability and how to establish the best methods of inventory analysis and create performance measures.

COURSE OUTCOME: Student gains knowledge on effective utilization of materials in manufacturing and service organization

UNIT I INTRODUCTION - Operating environment-aggregate planning-role, need, strategies, costs techniques, approaches-master scheduling-manufacturing planning and control system-manufacturing resource planning-enterprise resource planning-making the production plan

UNIT II MATERIALS PLANNING - Materials requirements planning-bill of materials-re-source requirement planning-manufacturing resource planning-capacity management-scheduling orders-production activity control-codification.

UNIT III INVENTORY MANAGEMENT - Policy Decisions-objectives-control - Retail Discounting Model, Newsvendor Model; EOQ and EBQ models for uniform and variable demand with and without shortages -Quantity discount models. Probabilistic inventory models.

UNIT IV PURCHASING MANAGEMENT - Establishing specifications-selecting suppliers-price determination-forward buying-mixed buying strategy-price forecasting-buying seasonal commodities-purchasing under uncertainty-demand management-price forecasting-purchasing under uncertainty-purchasing of capital equipment-international purchasing

UNIT V WAREHOUSE MANAGEMENT - Stores management-stores systems and procedures-incoming materials control-stores accounting and stock verification-Obsolete, surplus and scrap-value analysis-material handling-transportation and traffic management - operational efficiency-productivity-cost effectiveness-performance

measurement

TEXT BOOKS:

1. J.R.Tony Arnold, Stephen N. Chapman, Lloyd M. Clive, "Materials Management", Pearson, 2012.
2. P. Gopalakrishnan, "Purchasing and Materials Management", Tata McGraw Hill, 2012

REFERENCE BOOKS:

1. Ajay K Garg, "Production and Operations Management" , Tata McGraw Hill, 2012.
2. Ronald H. Ballou and Samir K. Srivastava, "Business Logistics and Supply Chain Management", Pearson education, Fifth Edition, 2013.
3. S. N. Chary, "Production and Operations Management", Tata McGraw Hill, 2012.

**TECHNOLOGY MANAGEMENT
SEMESTER – III**

APPLIED OPERATIONS RESEARCH

C	M
4	100

COURSE OBJECTIVE: Students learn about linear programming and extensions of LP models and the optimization algorithms. Helps students learn the replacement model, sequencing problems and processing of 'n' jobs through 'm' machines.

COURSE OUTCOME: Enable students to make decisions under conditions of certainty and uncertainty. Improves the ability to formulate effective models for real world OR problems.

UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP) - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.

UNIT II LINEAR PROGRAMMING EXTENSIONS - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and

Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.

UNIT III **INTEGER LINEAR PROGRAMMING AND GAME THEORY** - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.

UNIT IV **INVENTORY MODELS, SIMULATION AND DECISION THEORY** - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.

UNIT V **QUEUING THEORY AND REPLACEMENT MODELS** - Queuing Theory - single and Multi-channel models – infinite number of customers and infinite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

TEXT BOOKS:

1. Paneerselvam R., Operations Research, Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, Operations Research, Pearson Education, First Indian Reprint, 2012.
3. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, 9th Edition, Third Indian Reprint 2010.

REFERENCE BOOKS:

1. Sankara Iyer P, Operations Research, Tata Mcgraw Hill, 2008.
2. Frederick & Mark Hillier, Introduction to Management Science – A Modeling and case studies approach with spreadsheets, Tata Mcgraw Hill, 3rd edition, 2007.
3. Gupta P.K, Hira D.S, Problem in Operations Research, S.Chand and Co, 2010.
4. Kalavathy S, Operations Research, 3rd Edition, Vikas Publishing House, 2013.
5. Richard Broson , Govindasamy & Naachimuthu , Operations Research, Schaum's outline series, II Edition, 2000.

INTERNATIONAL BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Students become familiar with the theoretical background of international business. To understand the economic, cultural and ethical issues relating to international business.

COURSE OUTCOME: Enable students to apply theory in a variety of ways to varied international business situations, formulate frameworks for complex cross-border decision making

UNIT I INTRODUCTION - International Business –Definition – Internationalizing business-Advantages –factors causing globalization of business- international business environment – country attractiveness –Political, economic and cultural environment – Protection Vs liberalization of global business environment.

UNIT II INTERNATIONAL TRADE AND INVESTMENT - Promotion of global business – the role of GATT/WTO – multilateral trade negotiation and agreements – VIII & IX, round discussions and agreements – Challenges for global business –global trade and investment – theories of international trade and theories of international investment – Need for global competitiveness – Regional trade lock – Types – Advantages and disadvantages – RTBs across the globe – brief history.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT - Strategic compulsions- Standardization Vs Differentiation – Strategic options – Global portfolio management- global entry strategy – different forms of international business – advantages- organizational issues of international business – organizational structures – controlling of international business – approaches to control – performance of global business- performance evaluation system.

UNIT IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS - Global production –Location –scale of operations- cost of production – Make or Buy decisions – global supply chain issues – Quality considerations- Globalization of markets, marketing strategy – Challenges in product development , pricing, production and channel management- Investment decisions – economic- Political risk – sources of fund- exchange – rate risk and management – strategic orientation – selection of expatriate managers- Training and development – compensation.

UNIT V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT - Disadvantages of international business – Conflict in international business- Sources and types of conflict – Conflict resolutions – Negotiation – the role of international agencies –Ethical issues in international business – Ethical decision-making.

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, International Business, 6th edition, Tata Mc Graw Hill, 2009.
2. John D. Daniels and Lee H. Radebaugh, International Business, Pearson Education Asia, New Delhi, 13th edition, 2010.
3. K. Aswathappa, International Business, Tata Mc Graw Hill, 2008.
4. Michael R. Czinkota, Ilkka A. Ronkainen and Michael H. Moffet, International Business, Thomson, Bangalore, 8th edition, 2009.
5. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, International Management, Tata Mc Graw Hill, 2nd edition, 2008.
6. Oded Shenkar and Yaong Luo, International Business, John Wiley Inc, Noida, 2nd edition, 2007.

STRATEGIC MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Strategic Management, Globalisation, Competitive Advantage, Implementation Strategies, Evaluation and Issues of Non-Profit Organisations.

COURSE OUTCOME: Enhanced strategy formulations, Strategy implementations, evaluation procedures, New Business Models.

UNIT I STRATEGY AND PROCESS - Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.

UNIT II COMPETITIVE ADVANTAGE - External Environment - Porter’s Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution- Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive

advantage-Case study.

UNIT III STRATEGIES - The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy- Strategy in the Global Environment-Corporate Strategy-Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation-Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - McKinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.

UNIT IV STRATEGY IMPLEMENTATION & EVALUATION - The implementation process, Resource allocation, Designing organisational structure- Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.

UNIT V OTHER STRATEGIC ISSUES - Managing Technology and Innovation- Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study

TEXT BOOKS:

1. Thomas L. Wheelen, J.David Hunger and Krish Rangarajan, Strategic Management and Business policy, Pearson Education., 11th edition, 2007
2. Charles W.L.Hill & Gareth R.Jones, Strategic Management Theory, An Integrated approach, Biztantra, Wiley India,6th edition, 2007.
3. Azhar Kazmi, Strategic Management & Business Policy, Tata McGraw Hill, Third Edition, 2008.

REFERENCE BOOKS:

1. Fred.R.David, Strategic Management and cases, PHI Learning, 13th edition, 2010.
2. Upendra Hachru , Strategic Management concepts & cases , Excel Books, 8th edition, 2006.
3. Adriaan H.Aberberg and Alison Rieple, Dstrategic Management Theory & Application, Oxford University Press, 2008.
4. Arnoldo C.Hax and Nicholas S. Majluf, The Strategy Concept and Process – A Pragmatic Approach, Pearson Education, Second Edition, 2005.
5. Harvard Business Review, Business Policy – part I & II, Harvard Business School.

6. Saloner and Shepard, Podolny, Strategic Management, John Wiley, 2005.
7. Lawrence G. Hrebiniak, Making strategy work, Pearson, 2005.
8. Gupta, Gollakota and Srinivasan, Business Policy and Strategic Management – Concepts and Application, Prentice Hall of India, 2nd edition, 2007.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE: To understand about ERP systems, ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

COURSE OUTCOME: Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP systems.

UNIT I INTRODUCTION - Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems

UNIT II ERP SOLUTIONS AND FUNCTIONAL MODULES - Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.

UNIT III ERP IMPLEMENTATION - Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.

UNIT IV POST IMPLEMENTATION Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation

UNIT V EMERGING TRENDS ON ERP - Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics etc- Future trends in ERP systems- web enabled, Wireless technologies so on.

TEXT BOOKS:

1. Alexis Leon, ERP demystified, second Edition Tata McGraw-Hill, 2007.

REFERENCE BOOKS:

1. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008
2. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
3. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009.
4. Vinod Kumar Garg and N.K. Venkitakrishnan, ERP- Concepts and Practice, Prentice Hall of India, 2nd edition, 2006.
5. Summer, ERP, Pearson Education, 2008.

TECHNOLOGY FORECASTING AND ASSESSMENT

C	M
2	100

COURSE OBJECTIVE: To understand the technology growth, changes, forecasting techniques, Assessment and competitiveness.

COURSE OUTCOME: To adopt recent technological changes, Assess alternatives and Compete in Industry.

UNIT I INTRODUCTION - Technology origin and evolution – Tailoring technology to fit specific industry requirements – Organization redesign – Organizational re-engineering – Financial considerations for technology Planning.

UNIT II TECHNOLOGY CYCLE - Technology cycle and understanding technologies change - Responding to technological changes - Adoption of technology - Overcoming resistance - different approaches.

UNIT III TECHNOLOGY FORECASTING - Technology Forecasting – Need – Methodologies: - Trend Analysis, Analogy, Delphi, Soft System Methodology, Mathematical Models, Simulation, System dynamic, S-curve, Role of Technology Information Forecasting and Assessment Council (TIFAC).

UNIT IV TECHNOLOGY ASSESSMENT - Dissemination of technology information and strategic planning - Technology choice and evaluation methods – Analysis of alternative technologies - Implementing technology programmes.

UNIT V TECHNOLOGICAL COMPETITIVENESS IN COUNTRIES - Factory and office automation - Business Process Reengineering - Quality Management –Use of Transferred Technology - Collaborative

innovation environment - Collaborative knowledge-intensive industry environment – Business and government relations – Technological competitiveness in some of the developing and developed countries.

REFERENCE BOOKS:

1. Robert Szakonyi, Handbook of Technology Management, Viva Books Private Limited, 2008.
2. Gerard H. Gaynor, Handbook of Technology Management, McGraw Hill, 1996.
3. Betz, Frederic, Strategic Technology Management, New Delhi, McGraw Hill, 1996.
4. Tarek M. Khalil, Management of Technology, McGraw Hill, 2003.
5. Vijay Kumar Khurana, Management of Technology and Innovation, Ane books India, Chennai, 2007.

TECHNOLOGY COMMERCIALISATION AND TRANSFER

C	M
2	100

COURSE OBJECTIVE: To understand Technology Commercialization, Negotiation, Transfer Mechanisms, Licensing.

COURSE OUTCOME: Commercialization Process, Modernization, Material Transfer Agreements, Technology valuation methods, Technology Investment Practices.

UNIT I INTRODUCTION - Technology as asset - Competitive technology strategic options - Types of commercialization – Commercialization Process. Technology opportunities - Technology scale up - Transfer decision making - Choice of technology - Technology Transfer Categories: - International - Cross industry – Inter-firm – Intra-firm.

UNIT II TECHNOLOGY NEGOTIATION AND DIFFUSION - Technology Negotiation - Preparation and conduct of negotiations - Technology outsourcing - Socio, economic, political, legal and cultural considerations. Technology diffusion - Technology transfer modes - Technology up-gradation - Technology modernization - Adoption of new technologies - Absorption of new technologies - Absorption process - Relocation issues.

UNIT III TRANSFER MECHANISMS - Technology Transfer Services - Matching and pre-selection of prospective business partners - Commercializing innovations –Technology transfer negotiations - Technology transfer Offices: - databank - periodicals – web based services - - technology transfer agreements - Material Transfer Agreements (MTAs) - Business meets, workshops, training

programmes, press release.

UNIT IV TECHNOLOGY LICENSING AND PARTNERING - In-house development - Partnerships with intermediaries - Sponsored development - Joint development - Collaborative development - International networks of technology brokers. Technology Licensing - Rights of license holders- Financial terms – documentation - cross licenses - Collaboration and public policy

UNIT V SUPPORT SERVICES - Assistance in implementing technologies - Intellectual property related issues: – rights - litigations – royalty audits – auctions- Market/feasibility studies - Product marketing - Technology valuation: - methods - Contract negotiation – Subcontracting – sublicense - Technology investment practices - Arranging financial assistance: – sources - option fund – angel investment-Finance syndication – loan - venture capital and debts– grants – incentives.

REFERENCE BOOKS:

1. Zeans Block & Lan C. Macmillan, Corporate Venturing, Harvard Business School Press, 2003.
2. A Innovation Management, Strategies, Implementation and Profit by Afuah Oxford University Press 2nd edition, 2012.
3. Robert Szakonyl, Handbook of Technology Management, Viva Books Private Limited, 2006.
4. Gerard H. Gaynor, Handbook of Technology Management, McGraw Hill, 1996.
5. Tarek M. Khalil, Management of Technology, McGraw Hill, 2003.

RESEARCH AND DEVELOPMENT MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand how to design and lead R& D processes and manage R & D Organization.

COURSE OUTCOME: To ensure an effective, efficient and sustainable R & D

UNIT I INTRODUCTION - Introduction – historical perspective – validation and evaluation – basic research – applied research – technology in R&D – successful R&D management – basic condition – Elements – vision, mission, strategy – Deming cycle (PDCA), hypothetico deductive approach, competency matrices, thematic clustering

UNIT II INNOVATIVE ENVIRONMENT - Structural Components – Organizational Environment, Functional Organization, organization structure for innovation, Corporate R & D, Global R & D, Outsourcing

R & D, Virtual R & D. Creativity – Tools –Climate - MBTI Creativity Index. Innovation – Pathways, sources, business analysis techniques

UNIT III R & D QUALITY MANAGEMENT - Quality management system, Good laboratory practices, Good management practice, Quality environmental management system- Data recording. TQM in R & D – Quality procedures, Continuous improvement, measurement techniques, Benchmarking.

UNIT IV PEOPLE AND R&D - Building scientific skills base - Skill audit process, skill requirements, skills gap assessment, selection & induction, Developing people – Performance management , reviewing and monitoring, appraisal schemes, T & D, Career Management & Development - Succession planning. R & D team Manager – Leadership, Creative groups.

UNIT V R & D SUPPORT - Support Services – Analytical, Manufacturing, Library service, IT & Telecommunication, legal. Laboratory Automation – Synthesis Lab – Microscale experimentation. Intellectual property – patents – types, procedure. Publications – categories – Science Citation Index – impact factor – citation metrics. Intellectual property –patents- types, procedure. Financial Control – Budgets, Plans, Costs, research grants & funding, project proposal writing. Risk Assessment – Performance standards and indicators – Audit & review

TEXT BOOKS:

1. R.K.Jain, Harry C Triandis, Management of Research and Development Organization: Managing the Unmanageable, John Wiley & Sons, 1997.
2. George F Thompson, The Management of Research and Development, Batsford, 1970.

REFERENCE BOOKS:

1. Peter Barnfield, Research and Development in the Chemical and Pharmaceutical Industry, Wiley, 2006.
2. Alan Glasser, Research and Development Management, Prentice-Hall, 1982.
3. Harold Arthur Collison, Management of Research and Development, Pitman, 1964.
4. Andreas Holzinger, Successful Management of Research & Development, Books on Demand, 2011.

**TECHNOLOGY MANAGEMENT
SEMESTER – IV**

INTELLECTUAL PROPERTY RIGHTS

C	M
2	100

COURSE OBJECTIVE: To understand Intellectual Property Rights, Patents, GATT, Copyright, Trademarks and Geographical Indications.

COURSE OUTCOME: Importance of IPR, International Protection of IPR, Filing of Patents, Trademark Registration, Infringement of Patents and Remedies.

UNIT I INTRODUCTION TO INTELLECTUAL PROPERTY - Introduction - Invention and Creativity - An Overview of Intellectual Property (IP) - Importance - Protection of IPR - Basic types of property. Forms of Industrial Properties: Patents, Industrial Designs, Plant Varieties, copyrights, Trademarks, Geographical Indications.

UNIT II INTERNATIONAL PROTECTION OF INTELLECTUAL PROPERTY RIGHTS - Establishment of WIPO, General Agreement on Trade and Tariff (GATT).Patent Co-Operation Treaty, TRIPS agreement, Bern Convention, Rome convention, WTO and Intellectual Property Rights.

UNIT III PATENTS - Introduction to Patents – Overview, Historical development, concepts on Novelty, Utility, Non-Obviousness. Patentable and Non Patentable Inventions. Procedure for Filing of patents. Acquisition of patent rights. Compulsory Licenses, patent offices in India and jurisdiction.

UNIT IV COPYRIGHTS, TRADEMARKS, OTHER INTELLECTUAL PROPERTY RIGHTS - Copyrights and related rights - Trade Marks and rights arising from Trademark registration - Definitions - Industrial Designs and Integrated circuits - Protection of Geographical Indications at national and International levels, Plant Varieties - Application Procedures, Trade Secret,

UNIT V LEGAL ASPECTS OF INTELLECTUAL PROPERTY RIGHTS - Infringement of Patents and Remedies. Modification of granted patents, Case Studies on - Patents - Copyright and related rights - Trade Marks - Industrial design and Integrated circuits - Geographic indications - Protection against unfair competition. Enforcement of Intellectual Property Rights

REFERENCE BOOKS:

1. P. Narayanan, Intellectual property Rights, Eastern law House, Third Edition , 2008
2. G. P. Reddy, Intellectual Property Rights & Other Law, Gogia Law Agency, 2004
3. P. Narayanan, Patent Law, Eastern Law House, Fourth Edition, 2002
4. V.K. Unni, Trademarks & The Emerging Concepts of Cyber Property Rights, Eastern Law House, 2005.
5. Prof. A. Chandrasekaran, Intellectual Property Law, C. Sitaraman & Co. Pvt. Ltd., 2004.
1. Dr. Vikes Vashishth, Law & Practice of Intellectual Property in India, Bharath Law House Pvt. Ltd., 2002.

MANAGING TECHNOLOGICAL INNOVATION

C	M
2	100

COURSE OBJECTIVE: To understand Innovation types, Technology Change, Innovation Strategy, Management and Entrepreneurship.

COURSE OUTCOME: Creativity Techniques, Entrepreneurs opportunities, Formulating innovation strategy.

UNIT I INTRODUCTION - Innovation types, Process - Economic scale of innovation – Innovation system – Innovation research & development - Creativity techniques.

UNIT II TECHNOLOGY CHANGE - Technology change – Organizational issues – Entrepreneurs opportunities and Technology changes – Technology change and productivity.

UNIT III INNOVATION STRATEGY - Importance - innovation strategy in practice –types – formulating strategy - building innovative capabilities - returns from innovation strategy - innovation strategy in SMEs.

UNIT IV INNOVATION MANGEMENT - Product and services – benefi ts, failure, role of design. Operations and Process – importance, techniques, lean production, integration - internal, external.

UNIT V INNOVATION ORGANISATION - Entrepreneurship - Technology based, knowledge spillover in large and small fi rms – fi nancing - contribution of public entities.

REFERENCE BOOKS:

1. Mark Dodgson, David Gann, and Ammon Salter, The Management of Technological Innovation, Oxford University Press, 2008.
2. Scott Shane, Handbook of Technology and Innovation Management, John Wiley & Sons, 2009.
3. Frederick Betz, Managing Technological Innovation, John Wiley & Sons, Third Edition, 2011.
4. Edited by Michael Tushman and Philip Anderson (The Second Edition, 2004) Robert Szakonyi, Managing Strategic Innovation and Change: A Collection of Readings, Handbook of Technology Management – Viva Books Private, Limited, 2006.
5. Twiss B & Goodridge, M. Pitman, Managing Technology for Competitive Advantage: Integrating Technological and Organizational Development from Strategy to Action, 1989.

E-BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand the practices and technology to start an online business

COURSE OUTCOME: To know how to build and manage an e-business

UNIT I INTRODUCTION TO e-BUSINESS - e-business, e-business vs e-commerce, Economic forces – advantages – myths – e-business models, design, develop and manage e-business, Web 2.0 and Social Networking, Mobile Commerce

UNIT II TECHNOLOGY INFRASTRUCTURE - Internet and World Wide Web, internet protocols - FTP, intranet and extranet, information publishing technology- basics of web server hardware and software.

UNIT III BUSINESS APPLICATIONS - Consumer oriented e-business – e-tailing and models - Marketing on web – advertising, e-mail marketing, affiliated programs - e-CRM; online services, Business oriented e-business, e-governance, EDI on the internet, Delivery management system, Web Auctions, Virtual communities and Web portals

UNIT IV e-BUSINESS PAYMENTS AND SECURITY - E-payments - Characteristics of payment of systems, protocols, e-cash, e-cheque and Micro payment systems- internet security – cryptography – security protocols – network security.

UNIT V LEGAL AND PRIVACY ISSUES - Legal, Ethics and privacy issues – Protection needs and methodology – consumer protection, cyber laws, contracts and warranties, Taxation and encryption policies.

TEXT BOOKS:

1. Harvey M.Deitel, Paul J.Deitel, Kate Steinbuhler, e-Business and e-Commerce for Managers, Pearson, 2011.
2. Efraim Turban, Jae K. Lee, David King, Ting Peng Liang, Deborrah Turban, Electronic Commerce –A Managerial Perspective, Pearson Education Asia, 2010.

REFERENCE BOOKS:

1. Parag Kulkarni, Sunita Jahirabadkao, Pradeep Chande, e-Business, Oxford University Press, 2012.
2. Hentry Chan & El, E-Commerce – Fundamentals and Applications, Wiley India Pvt. Ltd., 2007.
3. Gary P. Schneider, Electronic Commerce, Thomson Course Technology, Fourth Annual Edition, 2012.
4. Bharat Bhasker, Electronic Commerce – Frame Work Technologies and Applications, Tata McGraw Hill Publications, 3rd Edition, 2009.
5. Kamlesh K. Bajaj and Debjani Nag, e-Commerce- The Cutting Edge of Business, Tata McGraw-Hill Publications, 7th Reprint, 2009.
6. Kalakota et al, Frontiers of Electronic Commerce, Addison Wesley, 2004
7. Micheal Papaloelon and Peter Robert, e-Business, Wiley India, 2006.

SOFTWARE PROJECT AND QUALITY MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand project management cycle in software development. To study various project estimation and quality models in software development

COURSE OUTCOME: Knowledge of software development process and quality models. Knowledge of software project estimation and quality assurance

UNIT I INTRODUCTION - Software Projects, Projects Planning, Process models, Waterfall, RAD, V, Spiral, Incremental, Prototyping, Agile, Project Tracking.

UNIT II SOFTWARE METRICS - Goal, Question, Metric (GQM) model, Product Quality metrics, In process Quality metrics, Metrics for software maintenance and testing, Complexity Metrics.

UNIT III SOFTWARE PROJECT ESTIMATION - Effort and Cost Estimation - Expert Judgment, LOC, Function Points, Extended Function Points, Feature Points, Object Points, COCOMO-81, COCOMO-II; Risk Management.

UNIT IV SOFTWARE QUALITY - Quality Management Systems, Software Quality Models-FURPS, McCalls Models, Applying seven basic quality

tools in software development, Measuring Quality, Gilb, CoQUAMO, Lean software development.

UNIT V SOFTWARE QUALITY ASSURANCE - Software Reliability models- Rayleigh model, Weibull model; Defect Removal Effectiveness; Quality standards- ISO 9000 models and standards for process improvement, ISO/IEC 9126-1 to 9126-4, SQuaRE, ISO/IEC 25000, ISO/IEC 25010, CMM, PCMM, CMMI, SPICE.

TEXT BOOKS:

1. Roger S. Pressman, Software Engineering A Practitioners Approach, McGraw Hill International Edition, New Delhi, 7th Edition, 2010.
2. Stephen Kan, Metrics and Models in Software Quality Engineering, Pearson Education Asia, 8th Impression 2009.

REFERENCE BOOKS:

1. Walker Royce, Software Project Management – A unified framework, Pearson Education Asia, New Delhi, 2000.
2. Alan Gillies, Software Quality – Theory and Management, Thomson Learning, 2011.
3. Bob Hughes and Mike Cotterell, Software Project Management, Tata McGraw Hill, 5th Edition, 2010.
4. Robert T. Futrell, Donald F. Sahefer and Linda I. Shafer, Quality Software Project Management, Pearson Education Asia, 2002.
5. Richard H. Thayer, Software Engineering Project Management, John Wiley, 2007

DATA MINING & BUSINESS INTELLIGENCE

C	M
2	100

COURSE OBJECTIVE: To know how to derive meaning from huge volume of data and information. To understand how knowledge discovering process is used in business decision making

COURSE OUTCOME: Big Data Management. Appreciate the techniques of knowledge discovery for business applications

UNIT I INTRODUCTION - Data mining, Text mining, Web mining, Spatial mining, Process mining, BI process- Private and Public intelligence, Strategic assessment of implementing BI

UNIT II DATA WAREHOUSING - Data ware house – characteristics and view - OLTP and OLAP - Design and development of data warehouse, Meta data models, Extract/ Transform / Load (ETL) design

UNIT III DATA MINING TOOLS, METHODS AND TECHNIQUES - Regression and

correlation; Classification- Decision trees; clustering –Neural networks; Market basket analysis- Association rules-Genetic algorithms and link analysis, Support Vector Machine, Ant Colony Optimization

UNIT IV MODERN INFORMATION TECHNOLOGY AND ITS BUSINESS OPPORTUNITIES - Business intelligence software, BI on web, Ethical and legal limits, Industrial espionage, modern techniques of crypto analysis, managing and organizing for an effective BI Team.

UNIT V BI AND DATA MINING APPLICATIONS - Applications in various sectors – Retailing, CRM, Banking, Stock Pricing, Production, Crime, Genetics, Medical, Pharmaceutical.

TEXT BOOKS:

1. Jaiwei Ham and Micheline Kamber, Data Mining concepts and techniques, Kauffmann Publishers, 3rd edition, 2011.
2. Efraim Turban, Ramesh Sharda, Jay E. Aronson and David King, Business Intelligence, Prentice Hall, 2nd edition, 2010.

REFERENCE BOOKS:

1. W. H. Inmon, Building the Data Warehouse, Fourth Edition Wiley India Pvt. Ltd., 2005.
2. Ralph Kimball and Richard Merz, The Data Warehouse Toolkit, John Wiley, 3rd edition, 2013.
3. Michel Berry and Gordon Linoff, Mastering Data Mining, John Wiley and Sons Inc, 2nd Edition, 2011.
4. Michel Berry and Gordon Linoff, Data Mining Techniques for Marketing, Sales and Customer Support, John Wiley, 3rd edition, 2011.
5. G. K. Gupta, Introduction to Data Mining with Case Studies, Prentice Hall of India, 2nd edition, 2011.
6. Giudici, Applied Data mining – Statistical Methods for Business and Industry, JohnWiley, 2nd edition, 2009.
7. Elizabeth Vitt, Michael Luckevich Stacia Misner, Business Intelligence, Microsoft, 2011.
8. Michalewicz Z., Schmidt M. Michalewicz M and Chiriac C, Adaptive Business Intelligence, Springer – Verlag, 2010.
9. Galit Shmueli, Nitin R. Patel and Peter C. Bruce, Data Mining for Business Intelligence – Concepts, Techniques and Applications. Wiley, India, 2nd edition, 2010.

**MARKETING MANAGEMENT
SEMESTER – III**

APPLIED OPERATIONS RESEARCH

C	M
4	100

COURSE OBJECTIVE: Students learn about linear programming and extensions of LP models and the optimization algorithms. Helps students learn the replacement model, sequencing problems and processing of 'n' jobs through 'm' machines.

COURSE OUTCOME: Enable students to make decisions under conditions of certainty and uncertainty. Improves the ability to formulate effective models for real world OR problems.

UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP) - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.

UNIT II LINEAR PROGRAMMING EXTENSIONS - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.

UNIT III INTEGER LINEAR PROGRAMMING AND GAME THEORY - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.

UNIT IV INVENTORY MODELS, SIMULATION AND DECISION THEORY - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.

UNIT V QUEUING THEORY AND REPLACEMENT MODELS - Queuing Theory - single and Multi-channel models – infi nite number of customers and

infinite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

TEXT BOOKS:

1. Paneerselvam R., Operations Research, Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, Operations Research, Pearson Education, First Indian Reprint, 2012.
3. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, 9th Edition, Third Indian Reprint 2010.

REFERENCE BOOKS:

1. Sankara Iyer P, Operations Research, Tata Mcgraw Hill, 2008.
2. Frederick & Mark Hillier, Introduction to Management Science – A Modeling and case studies approach with spreadsheets, Tata Mcgraw Hill, 3rd edition, 2007.
3. Gupta P.K, Hira D.S, Problem in Operations Research, S.Chand and Co, 2010.
4. Kalavathy S, Operations Research, 3rd Edition, Vikas Publishing House, 2013.
5. Richard Broson , Govindasamy & Naachimuthu , Operations Research, Schaum's outline series, II Edition, 2000.

INTERNATIONAL BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Students become familiar with the theoretical background of international business. To understand the economic, cultural and ethical issues relating to international business.

COURSE OUTCOME: Enable students to apply theory it in a variety of ways to varied international business situations, formulate frameworks for complex cross-border decision making

UNIT I INTRODUCTION - International Business –Definition – Internationalizing business-Advantages –factors causing globalization of business- international business environment – country attractiveness –Political, economic and cultural environment – Protection Vs liberalization of global business environment.

UNIT II INTERNATIONAL TRADE AND INVESTMENT - Promotion of global business – the role of GATT/WTO – multilateral trade negotiation and

agreements – VIII & IX, round discussions and agreements – Challenges for global business –global trade and investment – theories of international trade and theories of international investment – Need for global competitiveness – Regional trade block – Types – Advantages and disadvantages – RTBs across the globe – brief history.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT - Strategic compulsions- Standardization Vs Differentiation – Strategic options – Global portfolio management- global entry strategy – different forms of international business – advantages- organizational issues of international business – organizational structures – controlling of international business – approaches to control – performance of global business- performance evaluation system.

UNIT IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS - Global production –Location –scale of operations- cost of production – Make or Buy decisions – global supply chain issues – Quality considerations- Globalization of markets, marketing strategy – Challenges in product development , pricing, production and channel management-Investment decisions – economic- Political risk – sources of fund- exchange – rate risk and management – strategic orientation – selection of expatriate managers- Training and development – compensation.

UNIT V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT - Disadvantages of international business – Conflict in international business- Sources and types of conflict – Conflict resolutions – Negotiation – the role of international agencies –Ethical issues in international business – Ethical decision-making.

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, International Business, 6th edition, Tata Mc Graw Hill, 2009.
2. John D. Daniels and Lee H. Radebaugh, International Business, Pearson Education Asia, New Delhi, 13th editon, 2010.
3. K. Aswathappa, International Business, Tata Mc Graw Hill, 2008.
4. Michael R. Czinkota, Ilkka A. Ronkainen and Michael H. Moffet, International Business, Thomson, Bangalore, 8th edition, 2009.
5. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, International Management, Tata Mc Graw Hill, 2nd edition, 2008.
6. Oded Shenkar and Yaong Luo, International Business, John Wiley Inc, Noida, 2nd edition, 2007.

STRATEGIC MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Strategic Management, Globalisation, Competitive Advantage, Implementation Strategies, Evaluation and Issues of Non-Profit Organisations.

COURSE OUTCOME: Enhanced strategy formulations, Strategy implementations, evaluation procedures, New Business Models.

UNIT I STRATEGY AND PROCESS - Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.

UNIT II COMPETITIVE ADVANTAGE - External Environment - Porter's Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution- Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage-Case study.

UNIT III STRATEGIES - The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy-Strategy in the Global Environment-Corporate Strategy-Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation- Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - McKinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.

UNIT IV STRATEGY IMPLEMENTATION & EVALUATION - The implementation process, Resource allocation, Designing organisational structure-Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.

UNIT V OTHER STRATEGIC ISSUES - Managing Technology and Innovation- Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study

TEXT BOOKS:

1. Thomas L. Wheelen, J.David Hunger and Krish Rangarajan, Strategic Management and Business policy, Pearson Education., 11th edition, 2007
2. Charles W.L.Hill & Gareth R.Jones, Strategic Management Theory, An Integrated approach, Biztantra, Wiley India,6th edition, 2007.
3. Azhar Kazmi, Strategic Management & Business Policy, Tata McGraw Hill, Third Edition, 2008.

REFERENCE BOOKS:

1. Fred.R.David, Strategic Management and cases, PHI Learning, 13th edition, 2010.
2. Upendra Hachru , Strategic Management concepts & cases , Excel Books, 8th edition, 2006.
3. Adriauf HAberberg and Alison Rieple, Dstrategic Management Theory & Application, Oxford University Press, 2008.
4. Arnolddo C.Hax and Nicholas S. Majluf, The Strategy Concept and Process – A Pragmatic Approach, Pearson Education, Second Edition, 2005.
5. Harvard Business Review, Business Policy – part I & II, Harvard Business School.
6. Saloner and Shepard, Podolny, Strategic Management, John Wiley, 2005.
7. Lawrence G. Hrebiniak, Making strategy work, Pearson, 2005.
8. Gupta, Gollakota and Srinivasan, Business Policy and Strategic Management – Concepts and Application, Prentice Hall of India, 2nd edition, 2007.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE: To understand about ERP systems, ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

COURSE OUTCOME: Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP systems.

- UNIT I INTRODUCTION** - Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems
- UNIT II ERP SOLUTIONS AND FUNCTIONAL MODULES** - Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.
- UNIT III ERP IMPLEMENTATION** - Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.
- UNIT IV POST IMPLEMENTATION** Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation
- UNIT V EMERGING TRENDS ON ERP** - Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics etc- Future trends in ERP systems- web enabled, Wireless technologies so on.

TEXT BOOKS:

1. Alexis Leon, ERP demystifi ed, second Edition Tata McGraw-Hill, 2007.

REFERENCE BOOKS:

1. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008
2. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
3. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009.
4. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, Prentice Hall of India,2nd edition, 2006.
5. Summer, ERP, Pearson Education, 2008.

MARKETING RESEARCH

C	M
2	100

COURSE OBJECTIVE: To understand the methods of understanding the market needs and the tools to quantitatively analyse such needs.

COURSE OUTCOME: To successfully identify the methods for product launch after a market analysis.

UNIT I OVERVIEW OF MARKETING RESEARCH - Meaning, Nature, Scope Importance and Limitations of Marketing Research, Marketing Research Vs. Market Research, Organization of Marketing Research Department, Career opportunities in Marketing Research, Marketing Research Agencies – definition, functions, organizational structure, merits and demerits of Marketing Research Agencies.

UNIT II MARKETING RESEARCH PROCESS - Characteristics of a good Marketing Research Plan, Steps in Marketing Research, Types of Research design – exploratory, descriptive, causal – their importance and limitations, Special techniques of Marketing Research – Panel Research, Retail/Shop research, Image Research, Omnibus surveys, Trade Research.

UNIT III DATA COLLECTION - Primary and Secondary data – meaning and types – Nominal, Ordinal, Interval, Ratio, Specific scales for measuring attitudes – Rating scales, Semantic, Thurston – Likert's, Guttman, Q-sort, Stapel scale, Methods of collecting Primary data – observation, personal interview, telephone and mail survey – Designing of questionnaire, distinction between questionnaire and interview schedule, Methods of sampling, Basic consideration in deciding upon sample size, Sampling errors.

UNIT IV MULTIVARIATE ANALYSIS - Preliminary steps – editing, coding, tabulation – Multivariate analysis – Discriminant, Canonical, Factor and Cluster analysis, Multi dimensional scaling, Multiple Regression - Structural Equation Modeling – Presentation of research findings – factors to be considered while drafting a Marketing Research report – contents of Marketing Research report.

UNIT V APPLICATIONS OF MARKETING RESEARCH - Product research, Packaging, Pricing, Customer satisfaction, Sales and distribution, Advertising, Media and Brand researches, Ethical issues in Marketing Research, Future of Marketing Research, Case studies in the above areas.

TEXT BOOKS:

1. Rajendra Nargundkar, "Marketing Research", Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2012.
2. Sharma, D.D., "Marketing Research – Principles, Applications and Cases", Sultan Chand and Sons, New Delhi, 2011.

REFERENCE BOOKS:

1. Hair, Bush and Ortinau, "Marketing Research", Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2012.
2. Zikmund and Babin, "Marketing Research", Cengage Learning, New Delhi, 2012.
3. Parasuraman, Dhruv Grewal and Krishnan,R., "Marketing Research", Biztantra Publications, New Delhi, 2010.

BRAND MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand the methods of managing brands and strategies for brand management.

COURSE OUTCOME: To successfully establish and sustain brands and lead to extensions.

UNIT I INTRODUCTION - Basics Understanding of Brands – Definitions - Branding Concepts – Functions of Brand - Significance of Brands – Different Types of Brands – Co branding – Store brands.

UNIT II BRAND STRATEGIES - Strategic Brand Management process – Building a strong brand – Brand positioning – Establishing Brand values – Brand vision – Brand Elements – Branding for Global Markets – Competing with foreign brands.

UNIT III BRAND COMMUNICATIONS - Brand image Building – Brand Loyalty programmes – Brand Promotion Methods – Role of Brand ambassadors, celebrities – On line Brand Promotions.

UNIT IV BRAND EXTENSION - Brand Adoption Practices – Different type of brand extension – Factors influencing Decision for extension – Re-branding and re-launching.

UNIT V BRAND PERFORMANCE - Measuring Brand Performance – Brand Equity Management - Global Branding strategies - Brand Audit – Brand Equity Measurement – Brand Leverage -Role of Brand Managers– Branding challenges & opportunities.

TEXT BOOKS:

1. Kevin Lane Keller, Strategic Brand Management: Building, Measuring and Managing, Prentice Hall, 4rd Edition, 2012.
2. Moorthi YLR, Brand Management – I edition, Vikas Publishing House 2012

REFERENCE BOOKS:

1. Ian Batey, Asain Branding – A Great way to fl y, PHI, Singapore, 2002.
2. Paul Tmepoal, Branding in Asia, John Willy, 2000.
3. Ramesh Kumar, Managing Indian Brands, Vikas Publication, India, 2002.
4. Jagdeep Kapoor, Brandex, Biztranza, India, 2005.
1. Mahim Sagar, Deepali Singh, D.P.Agarwal, Achintya Gupta.–Brand Management Ane Books Pvt. Ltd – (2009).

RETAIL MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand the concepts of effective retailing

COURSE OUTCOME: To manage the retail chains and understand the retail customer's behavior.

UNIT I INTRODUCTION - An overview of Global Retailing – Challenges and opportunities – Retail trends in India – Socio economic and technological Infl uences on retail management – Government of India policy implications on retails.

UNIT II RETAIL FORMATS - Organized and unorganized formats – Different organized retail formats – Characteristics of each format – Emerging trends in retail formats – MNC's role in organized retail formats.

UNIT III RETAILING DECISIONS - Choice of retail locations - internal and external atmospherics – Positioning of retail shops – Building retail store Image - Retail service quality management – Retail Supply Chain Management – Retail Pricing Decisions.

UNIT IV RETAIL SHOP MANAGEMENT - Visual Merchandise Management – Space Management – Retail Inventory Management – Retail accounting and audits - Retail store brands – Retail advertising and promotions – Retail Management Information Systems - Online retail – Emerging trends.

UNIT V RETAIL SHOPPER BEHAVIOUR - Understanding of Retail shopper behavior – Shopper Profi le Analysis – Shopping Decision Process - Factors influencing retail shopper behavior – Complaints Management - Retail sales force Management – Challenges in Retailing in India.

TEXT BOOKS:

1. Michael Havy ,Baston, Aweitz and Ajay Pandit, Retail Management, Tata Mcgraw Hill, Sixth Edition, 2007

2. Ogden, Integrated Retail Management, Biztantra, India, 2008.

REFERENCE BOOKS:

1. Patrick M. Dunne and Robert F Lusch, Retailing, Thomson Learning, 4th Edition 2010.
2. Chetan Bajaj, Rajnish Tow and Nidhi V. Srivatsava, Retail Management, Oxford University Press, 2nd edition, 2012.
3. Swapna Puadham, Retail Management -Text and Cases, Tata McGraw Hill, 2nd Edition, 2008.
4. Dunne, Retailing, Cengage Learning, 2nd Edition, 2008.
5. Ramkrishnan and Y.R.Srinivasan, Indian Retailing Text and Cases, Oxford University Press, 2008.
6. Dr.Jaspreet Kaur , Customer Relationship Management, Kogent Solution.

**MARKETING MANAGEMENT
SEMESTER – IV**

SERVICES MARKETING

C	M
2	100

COURSE OBJECTIVE: To understand the meaning of services and the significance of marketing the services.

COURSE OUTCOME: Will be able to apply the concepts of services marketing in promoting services.

UNIT I INTRODUCTION - Definition – Service Economy – Evolution and growth of service sector – Nature and Scope of Services – Unique characteristics of services - Challenges and issues in Services Marketing.

UNIT II SERVICE MARKETING OPPORTUNITIES - Assessing service market potential - Classification of services – Expanded marketing mix – Service marketing – Environment and trends – Service market segmentation, targeting and positioning.

UNIT III SERVICE DESIGN AND DEVELOPMENT - Service Life Cycle – New service development – Service Blue Printing – GAP model of service quality – Measuring service quality – SERVQUAL – Service Quality function development.

UNIT IV SERVICE DELIVERY AND PROMOTION - Positioning of services – Designing service delivery System, Service Channel – Pricing of services, methods – Service marketing triangle - Integrated Service marketing communication.

UNIT V SERVICE STRATEGIES - Service Marketing Strategies for health – Hospitality – Tourism – Financial – Logistics - Educational – Entertainment & public utility Information technique Services

TEXT BOOKS:

1. Christropher H.Lovelock and Jochen Wirtz, Services Marketing, Pearson Education, New Delhi, 7th edition, 2011.
2. Hoffman, Marketing of Services, Cengage Learning, 1st Edition, 2010.

REFERENCE BOOKS:

1. Kenneth E Clow, et al, Services Marketing Operation Management and Strategy, Biztantra, 2nd Edition, New Delhi, 2004.
2. Halen Woodroffe, Services Marketing, McMillan, 2008.
3. Valarie Zeithaml et al, Services Marketing, 5th International Edition, 2012.
4. Christian Gronroos, Services Management and Marketing a CRM Approach, John Wiley, 2001.
5. Gronroos, Service Management and Marketing –Wiley India, 2007.

INTEGRATED MARKETING COMMUNICATIONS

C	M
2	100

COURSE OBJECTIVE: This course introduces students to the basic concepts of marketing communication which includes advertising and sales promotion and how business organisations and other institutions carry out such activities.

COURSE OUTCOME: Insight into the importance of marketing communications planning and objective setting in relation to consumer decision making processes.

UNIT I INTRODUCTION TO ADVERTISEMENT -Concept and definition of advertisement – Social, Economic and Legal Implications of advertisements – setting advertisement objectives – Ad. Agencies – Selection and remuneration – Advertisement campaigns.

UNIT II ADVERTISEMENT MEDIA - Media plan – Type and choice criteria – Reach and frequency of advertisements – Cost of advertisements - related to sales – Media strategy and scheduling.

UNIT III DESIGN AND EXECUTION OF ADVERTISEMENTS - Message development – Different types of advertisements – Layout – Design appeal – Copy structure – Advertisement production – Print – Radio.

T.V. and Web advertisements – Media Research – Concept Testing– Measuring impact of advertisements.

UNIT IV INTRODUCTION TO SALES PROMOTION - Scope and role of sale promotion – Definition – Objectives of sales promotion - sales promotion techniques – Trade oriented and consumer oriented.

UNIT V SALES PROMOTION CAMPAIGN - Sales promotion – Requirement identification – Designing of sales promotion campaign – Involvement of salesmen and dealers – Out sourcing sales promotion national and international promotion strategies – Integrated promotion – Coordination within the various promotion techniques – Online sales promotions

TEXT BOOKS:

1. Semenile, Allen, O'Guinn, Kaufman Advertising and Sales Promotions – An Integrated Brand Approach -6th Edition, Cengage Learning. (2012).
2. Kenneth Clow. Donald Baack, Integrated Advertisements, Promotion and Marketing Communication, Prentice Hall of India, New Delhi, 6th edition, 2013.

REFERENCE BOOKS:

1. S. H. H. Kazmi and Satish K Batra, Advertising & Sales Promotion, Excel Books, New Delhi, ,2nd edition, 2008.
2. George E Belch and Michel A Belch, Advertising & Promotion, McGraw Hill, Singapore, 7th edition, 2011.
3. Julian Cummings, Sales Promotion, Kogan Page, London 2003.
4. E. Betch and Michael, Advertising and Promotion, McGraw Hill, 7th edition, 2003.
5. Jaishri Jefhwaney, Advertising Management, Oxford, 2013.
6. V.S.Padmanabhan, H.S.Murthy. Advertising and Sales Promotion (An Indian Perspective) Anes Books Pvt.Ltd -2011.

CONSUMER BEHAVIOR

C	M
2	100

COURSE OBJECTIVE: To understand the role of consumer behavior in marketing and to identify qualitative and quantitative methods of measuring consumer behavior.

COURSE OUTCOME: The student will understand the influences on customer choice and the process of human decision making in a marketing context.

- UNIT I** **INTRODUCTION** - Concepts – Significance – Dimensions of Consumer Behavior – Application of knowledge of Consumer Behaviour in marketing decisions.
- UNIT II** **CONSUMER BEHAVIOR MODELS** - Industrial and individual consumer behaviour models - Howard- Sheth, Engel – Kollat, Webster and Wind Consumer Behaviour Models – Implications of the models on marketing decisions.
- UNIT III** **INTERNAL INFLUENCES** - Psychological Influences on consumer behavior – motivation – perception – personality Learning and Attitude- Self Image and Life styles – Consumer expectation and satisfaction.
- UNIT IV** **EXTERNAL INFLUENCES** - Socio-Cultural, Cross Culture - Family group – Reference group – Communication -Influences on Consumer behavior
- UNIT V** **PURCHASE DECISION PROCESS** - High and low involvement - Pre-purchase and post-purchase behavior – Online purchase decision process – Diffusion of Innovation – Managing Dissonance - Emerging Issues.

TEXT BOOKS :

1. Leon G.Schiffman and Leslie Lasar Kanuk, Consumer Behavior, Pearson Education, India, 2013.
2. Paul Peter et al., Consumer Behavior and Marketing Strategy, Tata McGraw Hill, Indian Edition, 7th Edition 2005.

REFERENCE BOOKS:

1. Frank R. Kardes, Consumer Behaviour and Managerial Decision Making, 2nd Edition, 2011.
2. Assel, Consumer Behavior - A Strategic Approach, Biztranza, 2008.
3. Sheth Mittal, Consumer Behavior- A Managerial Perspective, Thomson Asia (P) Ltd., 2011.
4. Abbael, Consumer behavior: A strategic approach (Indian edition 2005) Wiley 2012.
5. Hed, Hoyer. Consumer behavior, 2008 edition Wiley 2012.
6. Das Gupta. Consumer behavior, 2008 edition, Wiley 2012.
7. Shri Prakash. Theory of Consumer behavior, 1 edition, Vikas 2012.
8. Srabanti Mukherjee, Consumer behavior, 2012, Cengage Learning.

CUSTOMER RELATIONSHIP MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand the need and importance of maintaining a good customer relationship.

COURSE OUTCOME: To use strategic customer acquisition and retention techniques in CRM.

UNIT I INTRODUCTION - Definitions - Concepts and Context of relationship Management – Evolution - Transactional Vs Relationship Approach – CRM as a strategic marketing tool – CRM significance to the stakeholders.

UNIT II UNDERSTANDING CUSTOMERS - Customer information Database – Customer Profile Analysis - Customer perception, Expectations analysis – Customer behavior in relationship perspectives; individual and group customer's - Customer life time value – Selection of Profitable customer segments.

UNIT III CRM STRUCTURE - Elements of CRM – CRM Process – Strategies for Customer acquisition – Retention and Prevention of defection – Models of CRM – CRM road map for business applications.

UNIT IV CRM PLANNING AND IMPLEMENTATION - Strategic CRM planning process – Implementation issues – CRM Tools- Analytical CRM – Operational CRM – Call center management – Role of CRM Managers.

UNIT V TRENDS IN CRM - e- CRM Solutions – Data Warehousing – Data mining for CRM – an introduction to CRM software packages.

TEXT BOOKS:

1. G.Shainesh, Jagdish, N.Sheth, Customer Relationships Management Strategic Perspective, Macmillan 2005.
2. Alok Kumar et al, Customer Relationship Management: Concepts and applications, Biztantra, 2008.

REFERENCE BOOKS:

1. H.Peeru Mohamed and A.Sahadevan, Customer Relation Management, Vikas Publishing 2010.
2. Jim Catheart, The Eight Competencies of Relationship Selling, Macmillan India, 2005.
3. Assel, Consumer Behavior, Cengage Learning, 6th Edition.
4. Kumar, Customer Relationship Management - A Database Approach, Wiley India, 2012.

5. Francis Buttle, Customer Relationship Management: Concepts & Tools, Elsevier, 2008.
6. Zikmund. Customer Relationship Management, Wiley 2012.
7. Mohammed Hp/Sagadevan.A Customer Relationship Management- A Step by Step Approach, 1st Edition, 2003.
8. G. Shainesh, J. Jagdish N Seth. Customer Relationship Management, Macmillan, 2005.

MARKETING ANALYTICS

C	M
2	100

COURSE OBJECTIVE: To understand the role of financial perspectives in marketing.

COURSE OUTCOME: To apply analytics concepts in marketing.

UNIT I INTRODUCTION - Introduction to Marketing analytics – Linking Marketing to financial performance of a firm – Financial implications of marketing Strategic decisions.

UNIT II CUSTOMER AND BRAND ANALYTICS - Cost of customer acquisition – Retention – Life time value of customers – Balanced Scorecard Approach to measure customers' satisfaction - Brand analytics – Brand equity – Brand portfolio management - Brand financial performance.

UNIT III COMMUNICATION AND PRICING ANALYTICS - Communication analytics – Profit impact on sales promotion – Advertisement cost benefit analysis - Measuring financial effectiveness of e-mail campaign - Pricing metric - Pricing simulation and its impact on profitability.

UNIT IV CHANNEL ANALYTICS - Financial Perspectives of Channel Participants - Marketing budget and resource allocation. Return on marketing investment (ROMI) - Marketing audit.

UNIT V ADDITIONAL ANALYTICS - Financial implications on Research and development – Training of sales force. Determination of financial incentives across Product / Service delivery system – Global Marketing Analytics.

REFERENCE BOOKS:

1. Paul W. Farris, Neil T. Bendle, Puillip E. Pfeifer and David J. Reibstein, Marketing Metrics : Measuring Salesforce Effectiveness and Channel Management, Pearson Education India, 2008.
2. John Davis, Measuring Marketing: 110 Key Metrics, Every Marketer

- Needs, Wiley Publisher, 2013.
3. Ned L. Roberto and John Davis, Metrics Driven Marketing.
 4. Paul W. Farris, Marketing Metrics: 50 + Metrics Every Executive should Master, Wharton School Publishing, 2008.
 5. David J. Reibstein, Marketing Metrics, Pearson Education (USA).
 6. Kavin Kale, Strategic Brand Management, Building Measuring & Managing Brand Keller, PHI, 3rd edition, 2008.
 7. Lilien, Kotter & Morthy, Marketing Models, PHI, 2010.
 8. Dhvur Grewal and Micheal Levy, Marketing Value Based, Tata Mc Graw Hill, 2008.

HUMAN RESOURCE MANAGEMENT SEMESTER – III

APPLIED OPERATIONS RESEARCH

C	M
4	100

COURSE OBJECTIVE: Students learn about linear programming and extensions of LP models and the optimization algorithms. Helps students learn the replacement model, sequencing problems and processing of 'n' jobs through 'm' machines.

COURSE OUTCOME: Enable students to make decisions under conditions of certainty and uncertainty. Improves the ability to formulate effective models for real world OR problems.

UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP) - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.

UNIT II LINEAR PROGRAMMING EXTENSIONS - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.

UNIT III INTEGER LINEAR PROGRAMMING AND GAME THEORY - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear

Combination (Averages), methods of matrices, graphical and LP solutions.

UNIT IV INVENTORY MODELS, SIMULATION AND DECISION THEORY - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.

UNIT V QUEUING THEORY AND REPLACEMENT MODELS - Queuing Theory - single and Multi-channel models – infinite number of customers and infinite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

TEXT BOOKS:

1. Paneerselvam R., "Operations Research", Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, "Operations Research", Pearson Education, First Indian Reprint, 2012.
3. Hamdy A Taha, "Introduction to Operations Research", Prentice Hall India, 9th Edition, Third Indian Reprint 2010.

REFERENCE BOOKS:

1. Sankara Iyer P, "Operations Research", Tata Mcgraw Hill, 2008.
2. Frederick & Mark Hillier, "Introduction to Management Science – A Modeling and case studies approach with spreadsheets", Tata Mcgraw Hill, 3rd edition, 2007.
3. Gupta P.K, Hira D.S, "Problem in Operations Research", S.Chand and Co, 2010.
4. Kalavathy S, "Operations Research", 3rd Edition, Vikas Publishing House, 2013.
5. Richard Brosn , Govindasamy & Naachimuthu , "Operations Research", Schaum's outline series, II Edition, 2000.

INTERNATIONAL BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Students become familiar with the theoretical background of international business. To understand the economic, cultural and ethical issues relating to international business.

COURSE OUTCOME: Enable students to apply theory in a variety of ways to varied international business situations, formulate frameworks for complex cross-border decision making

UNIT I INTRODUCTION - International Business –Definition – Internationalizing business-Advantages –factors causing globalization of business- international business environment – country attractiveness –Political, economic and cultural environment – Protection Vs liberalization of global business environment.

UNIT II INTERNATIONAL TRADE AND INVESTMENT - Promotion of global business – the role of GATT/WTO – multilateral trade negotiation and agreements – VIII & IX, round discussions and agreements – Challenges for global business –global trade and investment – theories of international trade and theories of international investment – Need for global competitiveness – Regional trade block – Types – Advantages and disadvantages – RTBs across the globe – brief history.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT - Strategic compulsions-Standardization Vs Differentiation – Strategic options – Global portfolio management- global entry strategy – different forms of international business – advantages- organizational issues of international business – organizational structures – controlling of international business – approaches to control – performance of global business- performance evaluation system.

UNIT IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS - Global production –Location –scale of operations- cost of production – Make or Buy decisions – global supply chain issues – Quality considerations- Globalization of markets, marketing strategy – Challenges in product development , pricing, production and channel management- Investment decisions – economic- Political risk – sources of fund- exchange – rate risk and management – strategic orientation – selection of expatriate managers- Training and development – compensation.

UNIT V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT - Disadvantages of international business – Conflict in international business- Sources and types of conflict – Conflict resolutions – Negotiation – the role of international agencies –Ethical issues in international business – Ethical decision-making.

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, International Business, 6th edition, Tata Mc Graw Hill, 2009.
2. John D. Daniels and Lee H. Radebaugh, International Business, Pearson Education Asia, New Delhi, 13th editon, 2010.
3. K. Aswathappa, International Business, Tata Mc Graw Hill, 2008.
4. Michael R. Czinkota, Ilkka A. Ronkainen and Michael H. Moffet, International Business, Thomson, Bangalore, 8th edition, 2009.
5. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, International Management, Tata Mc Graw Hill, 2nd edition, 2008.
6. Oded Shenkar and Yaong Luo, International Business, John Wiley Inc, Noida, 2nd edition, 2007.

STRATEGIC MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Strategic Management, Globalisation, Competitive Advantage, Implementation Strategies, Evaluation and Issues of Non-Profit Organisations.

COURSE OUTCOME: Enhanced strategy formulations, Strategy implementations, evaluation procedures, New Business Models.

UNIT I STRATEGY AND PROCESS - Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.

UNIT II COMPETITIVE ADVANTAGE - External Environment - Porter's Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution- Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage-Case study.

UNIT III STRATEGIES - The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy- Strategy in the Global Environment-Corporate Strategy-Vertical Integration-Diversification and Strategic Alliances- Building and

Restructuring the corporation-Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - McKinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.

UNIT IV STRATEGY IMPLEMENTATION & EVALUATION - The implementation process, Resource allocation, Designing organisational structure- Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.

UNIT V OTHER STRATEGIC ISSUES - Managing Technology and Innovation- Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study

TEXT BOOKS:

1. Thomas L. Wheelen, J.David Hunger and Krish Rangarajan, Strategic Management and Business policy, Pearson Education., 11th edition, 2007
2. Charles W.L.Hill & Gareth R.Jones, Strategic Management Theory, An Integrated approach, Biztantra, Wiley India,6th edition, 2007.
3. Azhar Kazmi, Strategic Management & Business Policy, Tata McGraw Hill, Third Edition, 2008.

REFERENCE BOOKS:

1. Fred.R.David, Strategic Management and cases, PHI Learning, 13th edition, 2010.
2. Upendra Hachru , Strategic Management concepts & cases , Excel Books, 8th edition, 2006.
3. Adriaan H.Aberberg and Alison Rieple, Dstrategic Management Theory & Application, Oxford University Press, 2008.
4. Arnaldo C.Hax and Nicholas S. Majluf, The Strategy Concept and Process – A Pragmatic Approach, Pearson Education, Second Edition, 2005.
5. Harvard Business Review, Business Policy – part I & II, Harvard Business School.
6. Saloner and Shepard, Podolny, Strategic Management, John Wiley, 2005.
7. Lawrence G. Hrebiniak, Making strategy work, Pearson, 2005.
8. Gupta, Gollakota and Srinivasan, Business Policy and Strategic Management – Concepts and Application, Prentice Hall of India, 2nd edition, 2007.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE: To understand about ERP systems, ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

COURSE OUTCOME: Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP systems.

UNIT I INTRODUCTION - Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems

UNIT II ERP SOLUTIONS AND FUNCTIONAL MODULES - Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.

UNIT III ERP IMPLEMENTATION - Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.

UNIT IV POST IMPLEMENTATION Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation

UNIT V EMERGING TRENDS ON ERP - Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics etc- Future trends in ERP systems- web enabled, Wireless technologies so on.

TEXT BOOKS:

1. Alexis Leon, ERP demystifi ed, second Edition Tata McGraw-Hill, 2007.

REFERENCE BOOKS:

1. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008
2. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
3. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009.
4. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and

- Practice, Prentice Hall of India, 2nd edition, 2006.
 5. Summer, ERP, Pearson Education, 2008.

MANAGERIAL BEHAVIOR AND EFFECTIVENESS

C	M
2	100

COURSE OBJECTIVE: To examine managerial styles in terms of concern for production and concern for people. To assess different systems of management and relate these systems to organizational characteristics.

COURSE OUTCOME: Students will gain knowledge about appropriate style of managerial behavior.

UNIT I **DEFINING THE MANAGERIAL JOB** - Descriptive Dimensions of Managerial Jobs – Methods – Model – Time Dimensions in Managerial Jobs – Effective and Ineffective Job behaviour – Functional and level differences in Managerial Job behaviour.

UNIT II **DESIGNING THE MANAGERIAL JOB** - Identifying Managerial Talent – Selection and Recruitment – Managerial Skills Development – Pay and Rewards – Managerial Motivation – Effective Management Criteria – Performance Appraisal Measures – Balanced Scorecard - Feedback – Career Management – Current Practices.

UNIT III **THE CONCEPT OF MANAGERIAL EFFECTIVENESS** - Definition – The person, process, product approaches – Bridging the Gap – Measuring Managerial Effectiveness – Current Industrial and Government practices in the Management of Managerial Effectiveness- the Effective Manager as an Optimizer.

UNIT IV **ENVIRONMENTAL ISSUES IN MANAGERIAL EFFECTIVENESS** - Organisational Processes – Organisational Climate – Leader – Group Influences – Job Challenge – Competition – Managerial Styles.

UNIT V **DEVELOPING THE WINNING EDGE** - Organisational and Managerial Efforts – Self Development – Negotiation Skills – Development of the Competitive Spirit – Knowledge Management – Fostering Creativity and innovation .

REFERENCE BOOKS:

1. Peter Drucker, Management, Harper Row, 2008.
2. Milkovich and Newman, Compensation, McGraw-Hill International, 10th edition, 2010.
3. Blanchard and Thacker, Effective Training Systems, Strategies and Practices Pearson, 4th ed, 2010.
4. Dubrin, Leadership, Research Findings, Practices & Skills, Biztantra, 6th

- edition, 2009.
5. Joe Tidd , John Bessant, Keith Pavitt , Managing Innovation ,Wiley 3rd edition,2006.
 6. T.V.Rao,Appraising and Developing Managerial Performance, Excel Books, 2009.
 7. R.M.Omkar, Personality Development and Career Management, S.Chand, 1st Edition, 2008.
 8. Richard L. Daft, Leadership, Cengage, 1st Indian Reprint,2008.

STRATEGIC HRM & DEVELOPMENT

C	M
2	100

COURSE OBJECTIVE: To help students understand the factors of change in the political, social, environmental and the economic scenarios that has transformed the role of HR functions from being a support function to strategic function.

COURSE OUTCOME: Students will have a better understanding of the tools and techniques used by organizations to meet these challenges.

UNIT I HUMAN RESOURCE DEVELOPMENT - Meaning – Strategic framework for HRM and HRD – Vision, Mission and Values – Importance – Challenges to Organisations – HRD Functions - Roles of HRD Professionals - HRD Needs Assessment - HRD practices – Measures of HRD performance – Links to HR, Strategy and Business Goals – HRD Program Implementation and Evaluation – Recent trends – Strategic Capability , Bench Marking and HR Audit.

UNIT II E-HRM - e- Employee profile– e- selection and recruitment - Virtual learning and Orientation – e - training and development – e- Performance management and Compensation design – Development and Implementation of HRIS – Designing HR portals – Issues in employee privacy – Employee surveys online.

UNIT III CROSS CULTURAL HRM - Domestic Vs International HRM - Cultural Dynamics - Culture Assessment - Cross Cultural Education and Training Programs – Leadership and Strategic HR Issues in International Assignments - Current challenges in Outsourcing, Cross border M and A- Repatria-tion etc - Building Multicultural Organisation - International Compensation.

UNIT IV CAREER & COMPETENCY DEVELOPMENT - Career Concepts – Roles – Career stages – Career planning and Process – Career development Models– Career Motivation and Enrichment – Managing Career plateaus- Designing Effective Career

Development Systems – Competencies and Career Management – Competency Mapping Models – Equity and Competency based Compensation.

UNIT V EMPLOYEE COACHING & COUNSELING - Need for Coaching – Role of HR in coaching – Coaching and Performance – Skills for Effective Coaching – Coaching Effectiveness– Need for Counseling – Role of HR in Counseling - Components of Counseling Programs – Counseling Effectiveness – Employee Health and Welfare Programs – Work Stress – Sources - Consequences – Stress Management Techniques.- Eastern and Western Practices - Self Management and Emotional Intelligence.

TEXT BOOKS:

1. Randy L. Desimone, Jon M. Werner – David M. Mathis, Human Resource Development, Cengage Learning, 6th edition, 2011.
2. Paul Boselie. Strategic Human Resource Management. Tata McGraw Hill. 2011

REFERENCE BOOKS:

1. Jeffrey A Mello, Strategic Human Resource Management, Cengage Learning, Southwestern 3rd edition, 2010.
2. Robert L. Mathis and John H. Jackson, Human Resource Management, Cengage Learning, 13rd edition, 2010.
3. Monir Tayeb. International Human Resource Management. Oxford. 2007
4. Randall S Schuler and Susan E Jackson. Strategic Human Resource Management. Wiley India. 2nd edition, 2008.
5. McLeod. The Counsellor’s workbook. Tata McGraw Hill. 2011

PERFORMANCE MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand the definition, developments and use of tangible and intangible measures of performance management, understand the performance management cycle and how to manage it.

COURSE OUTCOME: Students are enabled to set business based objectives including SMART targets and measures, the barriers to effective performance and resolving those barriers through constant monitoring, coaching and development interventions

UNIT I INTRODUCTION - HR as assets- Definition of Human Resource

Accounting – Introduction to Human Resource Accounting – Human Resource accounting concepts, methods and applications – Human Resources accounting Vs other accounting.

UNIT II HUMAN RESOURCE COSTS - Measuring human resource cost - investment in employees-Replacement costs – Determination of Human Resource value – Monetary and non-monetary measurement methods – Return on Investment approach.

UNIT III HUMAN RESOURCE ACCOUNTING SYSTEM - Developing Human Resource Accounting systems – Implementation of Human Resource accounting – Integrated of accounting with other accounting systems – Recent advancements and future directions in Human Resource Accounting.

UNIT IV HUMAN RESOURCE AUDIT - Role of Human Resource audit in business environment - HR Audit objectives – Concepts –Components – Need- benefits –Importance –Methodology- Instruments – HRD scorecard –Effectiveness of HRD Audit as an instrument –Issues in HR audit – Focus of HR audit.

UNIT V HUMAN RESOURCE AUDIT REPORT - HRD audit report –Concept – Purpose –Role of HR managers and auditors –Report Design-Preparation of report –Use of Human Resource audit report for business improvement –Case studies.

REFERENCE BOOKS:

1. Eric G. Flamholtz, 'Human Resource Accounting –Advances in Concepts, Methods and Applications",Third Edition, 1999.
2. Pramanik.A.K(1993) M.C. Jain," Human Resource Accounting" Pointer publishers, Jaipur.
3. Nigam, M.S.Nigam S (1993) Importance of Human Resource in Organisation, Pointer publishers, Jaipur.
4. Prakash J, Khanelwal M C, Jain SC (1993), Human Resource Accounting, Pointer publishers, Jaipur, 2008.

**HUMAN RESOURCE MANAGEMENT
SEMESTER – IV**

TRAINING AND DEVELOPMENT

C	M
2	100

COURSE OBJECTIVE: To know the role and function of training and development in organization, learning theories, and principles and their implications for the effectiveness of training programs

COURSE OUTCOME: Develop the skills, abilities, and practical elements of employee development and performance improvement in organization and application of various and appropriate methods and techniques for identifying training needs.

UNIT I INTRODUCTION - Training, Development and Performance consulting – Design of HRD systems – Development of HRD strategies – Learning and Learning organisations – Training Policies – organisational climate for training and development – a system model.

UNIT II TRAINING NEEDS ANALYSIS - Objectives of training needs analysis - Identification of training needs and the process, tools and techniques – organisational analysis, task analysis and individual analysis – consolidation.

UNIT III DESIGN OF TRAINING PROGRAMS - Linking training needs and objectives of various theories of learning and methods of training – Learning cycles – factors for fixing duration – selection of participants – choice of trainers – course contents – inhouse arrangements and outsourcing – E learning – training for trainers.

UNIT IV DELIVERING THE TRAINING PROGRAMS - Conducting the programs – ice breaking and games – relevance of culture of participants – layout facilitating interactions – audio visual aids.

UNIT V EVALUATION OF TRAINING PROGRAMS - Objectives of evaluation – micro and macro levels – methods of evaluation – reaction, learning, behavior and results – Cost benefit analysis – Role of trainer and line manager in evaluations – Design of Evaluation – Kirkpatric's model

REFERENCE BOOKS:

1. Human Resources Development – Theory and Practice, Tapomoy Deb Ane Books India, 2008.
2. Human performance consulting, James. S. Pepitone, Guely publishing Company, Houston, 2006.
3. How to write and prepare training materials, Stimson N, Kogan page, 2nd edition, 2002.
4. Journals of Indian Society for Training and Development, New Delhi, 2010.

INDUSTRIAL RELATIONS AND LABOUR WELFARE

C	M
2	100

COURSE OBJECTIVE: To explore contemporary knowledge and gain a conceptual understanding of industrial relations and human resource management.

COURSE OUTCOME: Students will know how to manage work place conflict and they understand how to resolve industrial relations and human resource problems.

UNIT I **INDUSTRIAL RELATIONS** - Concepts – Importance – Industrial Relations problems in the Public Sector – Growth of Trade Unions – Codes of conduct.

UNIT II **INDUSTRIAL CONFLICTS** - Disputes – Impact – Causes – Strikes – Prevention – Industrial Peace – Government Machinery – Conciliation – Arbitration – Adjudication.

UNIT III **LABOUR WELFARE** - Concept – Objectives – Scope – Need – Voluntary Welfare Measures – Statutory Welfare Measures – Labour – Welfare Funds – Education and Training Schemes.

UNIT IV **INDUSTRIAL SAFETY** - Causes of Accidents – Prevention – Safety Provisions – Industrial Health and Hygiene – Importance – Problems – Occupational Hazards – Diseases – Psychological problems – Counseling – Statutory Provisions.

UNIT V **WELFARE OF SPECIAL CATEGORIES OF LABOUR** - Child Labour – Female Labour – Contract Labour – Construction Labour – Agricultural Labour – Differently abled Labour –BPO & KPO Labour - Social Assistance – Social Security – Implications.

TEXT BOOKS:

1. Mamoria C.B. and Sathish Mamoria, Dynamics of Industrial Relations, Himalaya Publishing House, New Delhi, 2010.
2. Arun Monappa, Ranjeet Nambudiri, Patturaja Selvaraj. Industrial relations & Labour Laws. Tata McGraw Hill. 2012.

REFERENCE BOOKS:

1. Ratna Sen, Industrial Relations in India, Shifting Paradigms, Macmillan India Ltd., New Delhi, 2009.
2. C.S.Venkata Ratnam, Globalisation and Labour Management Relations, Response Books, 2010.
3. Srivastava, Industrial Relations and Labour laws, Vikas, 6th edition, 2012.
4. P.N.Singh, Neeraj Kumar. Employee relations Management. Pearson. 2011.
5. P.R.N Sinha, Indu Bala Sinha, Seema Priyadarshini Shekhar. Industrial Relations, Trade Unions and Labour Legislation. Pearson. 2013.

ORGANISATIONAL THEORY, DESIGN & DEVELOPMENT

C	M
2	100

COURSE OBJECTIVE: To learn why and how an organization can be designed and developed to deal with the challenges from environment, technology, and its own processes.

COURSE OUTCOME: Students will analyze organizations more accurately and deeply by applying organization theory to actual organizations in order to solve real-life problems.

UNIT I ORGANISATION & ITS ENVIRONMENT - Meaning of Organisation – Need for exis-tence - Organisational Effectiveness – Creation of Value – Measuring Organisational Effectiveness – External Resources Approach, Internal Systems Approach and Technical approach - HR implications.

UNIT II ORGANIZATIONAL DESIGN - Organizational Design – Determinants – Components – Types - Basic Challenges of design – Differentiation, Integration, Centralization, Decentralization, Standardization, Mutual adjustment- Mechanistic and Organic Structures- Technological and Environmental Impacts on Design- Importance of Design – Success and Failures in design - Implications for Managers.

UNIT III ORGANISATIONAL CULTURE - Understanding Culture – Strong and Weak Cultures – Types of Cultures – Importance of Culture -

Creating and Sustaining Culture - Culture and Strategy - Implications for practicing Managers.

UNIT IV ORGANISATIONAL CHANGE - Meaning – Forces for Change - Resistance to Change – Types and forms of change – Evolutionary and Revolutionary change – Change process -Organisation Development – HR functions and Strategic Change Management - Implications for practicing Managers.

UNIT V ORGANISATION EVOLUTION AND SUSTENANCE - Organizational life cycle – Models of transformation – Models of Organizational Decision making – Organizational Learning – Innovation, Intrapreneurship and Creativity-HR implications

TEXT BOOKS:

1. Gareth R. Jones, Organisational Theory, Design & Change, Pearson Education, 7th Edition 2012.
2. Richard L. Daft, Understanding the theory & Design of Organisations, Cengage Learning Western, 10th Edition 2012.

REFERENCE BOOKS:

1. Thomson G. Cummings and Christopher G. Worley, Organisational development and Change, Cengage learning, 9th edition, 2011.
2. Robbins Organisation Theory; Structure Design & Applications, Prentice Hall of India, 3rd edition, 2013.
3. Bhupen Srivastava, Organisational Design and Development: Concepts application, Biztantra, 2010.
4. Robert A Paton, James Mc Calman, Change Management, A guide to effective implementation, Response Books, 2012.
5. Adrian Thornhill, Phil Lewis, Mike Millmore and Mark Saunders, Managing Change -A Human Resource Strategy Approach, Wiley, 2010.

SOCIAL PSYCHOLOGY

C	M
2	100

COURSE OBJECTIVE: To study social interaction and social influence. To understand the behavior and mental processes and enhances the ability to apply empirical knowledge to improve the lives of people.

COURSE OUTCOME: Students will gain knowledge on dynamics of intergroup relationships, conflict and cooperation and relationship between the individual and society.

- UNIT I INTRODUCTION TO SOCIAL PSYCHOLOGY** - Social Psychology – Origin and development – Social behaviour and social thought – Applications in society and business.
- UNIT II PERCEIVING AND UNDERSTANDING OTHERS** - Social perception – Nonverbal communication – Attribution – Impression formation and impression management.
- UNIT III COGNITION IN THE SOCIAL WORLD** - Social cognition – Schemas – Heuristics – Errors – Attitudes & Behaviour – Persuasion – Cognitive dissonance – Self, Self Esteem & Social Comparison.
- UNIT IV INTERPERSONAL RELATIONS** - Social identity – Prejudice – Discrimination – Aggression – Interpersonal attraction.
- UNIT V APPLIED SOCIAL PSYCHOLOGY** - Social Influence – Conformity – Compliance – Social Influence - Prosocial behaviour – Groups – Social issues.

TEXT BOOKS:

1. Baron, Byrne and Brascombe, Social Psychology, 11th Edition, Pearson, 2006.
2. David G. Myers, Social Psychology, Tata McGraw Hill, 8th Edition, 2005.

REFERENCE BOOKS:

1. Baron and Byrne, Social Psychology, PHI, 13th edition 2011.
2. Howitt. Social Psychology. Tata McGraw Hill, 5th edition, 2010.
3. Rohall et al. Social Psychology. PHI Learning. 2nd edition, 2010.
4. Ajzer, Attitudes, Personality and Behaviour, Tata McGraw Hill, 2005
5. Hollway. Social Psychology Matters. Tata McGraw Hill, 2006

STRESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To provide a broad physical, social and psychological understanding of human stress. The main focus is on presenting a broad background of stress research.

COURSE OUTCOME: Students will be able to understand the management of work related stress at an individual and organizational level and will help them to develop and implement effective strategies to prevent and manage stress at work.

UNIT I UNDERSTANDING STRESS - Meaning – Symptoms – Works Related Stress – Individual Stress – Reducing Stress – Burnout.

- UNIT II COMMON STRESS FACTORS TIME & CAREER PLATEAUING** - Time Management – Techniques – Importance of planning the day – Time management schedule – Developing concentration – Organizing the Work Area – Prioritizing – Beginning at the start – Techniques for conquering procrastination – Sensible delegation – Taking the right breaks – Learning to say 'No'.
- UNIT III CRISIS MANAGEMENT** - Implications – People issues – Environmental issues – Psychological fall outs – Learning to keep calm – Preventing interruptions – Controlling crisis – Importance of good communication – Taking advantage of crisis – Pushing new ideas – Empowerment.
- UNIT IV WORK PLACE HUMOUR** - Developing a sense of Humour – Learning to laugh – Role of group cohesion and team spirit – Using humour at work – Reducing conflicts with humour.
- UNIT V SELF DEVELOPMENT** - Improving Personality – Leading with Integrity – Enhancing Creativity – Effective decision Making – Sensible Communication – The Listening Game – Managing Self – Meditation for peace – Yoga for Life.

REFERENCE BOOKS:

1. Cooper, Managing Stress, Sage, 2011.
2. Waltshafer, Stress Management, Cengage Learning, 4th Edition 2009.
3. Jeff Davidson, Managing Stress, Prentice Hall of India, New Delhi, 2012.
4. Juan R. Alascal, Brucata, Laurel Brucata, Daisy Chauhan. Stress Mastery- The art of coping gracefully. Pearson, 2012.
5. Argyle. The Psychology of Happiness. Tata McGraw Hill. 2012.
6. Bartlett. Stress – Perspectives & Process. Tata McGraw Hill. 2012.

FINANCIAL SERVICES MANAGEMENT

SEMESTER – III

APPLIED OPERATIONS RESEARCH

C	M
4	100

COURSE OBJECTIVE: Students learn about linear programming and extensions of LP models and the optimization algorithms. Helps students learn the replacement model, sequencing problems and processing of 'n' jobs through 'm' machines.

COURSE OUTCOME: Enable students to make decisions under conditions of certainty and uncertainty. Improves the ability to formulate effective models for real world OR problems.

- UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP)** - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.
- UNIT II LINEAR PROGRAMMING EXTENSIONS** - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.
- UNIT III INTEGER LINEAR PROGRAMMING AND GAME THEORY** - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.
- UNIT IV INVENTORY MODELS, SIMULATION AND DECISION THEORY** - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.
- UNIT V QUEUING THEORY AND REPLACEMENT MODELS** - Queuing Theory - single and Multi-channel models – infinite number of customers and infinite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

TEXT BOOKS:

1. Paneerselvam R., "Operations Research", Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, "Operations Research", Pearson Education, First Indian Reprint, 2012.
3. Hamdy A Taha, "Introduction to Operations Research", Prentice Hall India, 9th Edition, Third Indian Reprint 2010.

REFERENCE BOOKS:

1. Sankara Iyer P, "Operations Research", Tata Mcgraw Hill, 2008.
2. Frederick & Mark Hillier, "Introduction to Management Science – A Modeling and case studies approach with spreadsheets", Tata Mcgraw Hill, 3rd edition, 2007.
3. Gupta P.K, Hira D.S, "Problem in Operations Research", S.Chand and Co, 2010.
4. Kalavathy S, "Operations Research", 3rd Edition, Vikas Publishing House, 2013.
5. Richard Broson , Govindasamy & Naachimuthu , "Operations Research", Schaum's outline series, II Edition, 2000.

INTERNATIONAL BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Students become familiar with the theoretical background of international business. To understand the economic, cultural and ethical issues relating to international business.

COURSE OUTCOME: Enable students to apply theory it in a variety of ways to varied international business situations, formulate frameworks for complex cross-border decision making

UNIT I INTRODUCTION - International Business –Definition – Internationalizing business-Advantages –factors causing globalization of business- international business environment – country attractiveness –Political, economic and cultural environment – Protection Vs liberalization of global business environment.

UNIT II INTERNATIONAL TRADE AND INVESTMENT - Promotion of global business – the role of GATT/WTO – multilateral trade negotiation and agreements – VIII & IX, round discussions and agreements – Challenges for global business –global trade and investment – theories of international trade and theories of international investment – Need for global competitiveness – Regional trade block – Types – Advantages and disadvantages – RTBs across the globe – brief history.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT - Strategic compulsions- Standardization Vs Differentiation – Strategic options – Global portfolio management- global entry strategy – different forms of international business – advantages- organizational issues of international business – organizational structures – controlling of

international business – approaches to control – performance of global business- performance evaluation system.

UNIT IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS - Global production –Location –scale of operations- cost of production – Make or Buy decisions – global supply chain issues – Quality considerations- Globalization of markets, marketing strategy – Challenges in product development , pricing, production and channel management- Investment decisions – economic- Political risk – sources of fund- exchange – rate risk and management – strategic orientation – selection of expatriate managers- Training and development – compensation.

UNIT V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT - Disadvantages of international business – Confl ict in international business- Sources and types of confl ict – Confl ict resolutions – Negotiation – the role of international agencies –Ethical issues in international business – Ethical decision-making.

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, “International Business”, 6th edition, Tata Mc Graw Hill, 2009.
2. John D. Daniels and Lee H. Radebaugh, “International Business”, Pearson Education Asia, New Delhi, 13th editon, 2010.
3. K. Aswathappa, “International Business”, Tata Mc Graw Hill, 2008.
4. Michael R. Czinkota, Ilkka A. Ronkainen and Michael H. Moffet, “International Business”, Thomson, Bangalore, 8th edition, 2009.
5. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, “International Management”, Tata Mc Graw Hill, 2nd edition, 2008.
6. Oded Shenkar and Yaong Luo, “International Business”, John Wiley Inc, Noida, 2nd edition, 2007.

STRATEGIC MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Strategic Management, Globalisation, Competitive Advantage, Implementation Strategies, Evaluation and Issues of Non-Profi t Organisations.

COURSE OUTCOME: Enhanced strategy formulations, Strategy implementations, evaluation procedures, New Business Models.

- UNIT I STRATEGY AND PROCESS** - Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.
- UNIT II COMPETITIVE ADVANTAGE** - External Environment - Porter's Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution- Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage-Case study.
- UNIT III STRATEGIES** - The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy-Strategy in the Global Environment-Corporate Strategy-Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation-Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - McKinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.
- UNIT IV STRATEGY IMPLEMENTATION & EVALUATION** - The implementation process, Resource allocation, Designing organisational structure-Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.
- UNIT V OTHER STRATEGIC ISSUES** - Managing Technology and Innovation-Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study

TEXT BOOKS:

1. Thomas L. Wheelen, J.David Hunger and Krish Rangarajan, "Strategic Management and Business policy", Pearson Education., 11th edition, 2007
2. Charles W.L.Hill & Gareth R.Jones, "Strategic Management Theory - An Integrated approach", Biztantra, Wiley India,6th edition, 2007.
3. Azhar Kazmi, "Strategic Management & Business Policy", Tata McGraw Hill, Third Edition, 2008.

REFERENCE BOOKS:

1. Fred.R.David, Strategic Management and cases, PHI Learning, 13th edition, 2010.
2. Upendra Hachru , Strategic Management concepts & cases , Excel Books, 8th edition, 2006.
3. Adriaan H.Aberberg and Alison Rieple, Dstrategic Management Theory & Application, Oxford University Press, 2008.
4. Arnaldo C.Hax and Nicholas S. Majluf, The Strategy Concept and Process – A Pragmatic Approach, Pearson Education, Second Edition, 2005.
5. Harvard Business Review, Business Policy – part I & II, Harvard Business School.
6. Saloner and Shepard, Podolny, Strategic Management, John Wiley, 2005.
7. Lawrence G. Hrebiniak, Making strategy work, Pearson, 2005.
8. Gupta, Gollakota and Srinivasan, Business Policy and Strategic Management – Concepts and Application, Prentice Hall of India, 2nd edition, 2007.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE: To understand about ERP systems, ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

COURSE OUTCOME: Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP systems.

UNIT I INTRODUCTION - Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems

UNIT II ERP SOLUTIONS AND FUNCTIONAL MODULES - Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.

UNIT III ERP IMPLEMENTATION - Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation,

Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.

UNIT IV POST IMPLEMENTATION Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation

UNIT V EMERGING TRENDS ON ERP - Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics etc- Future trends in ERP systems- web enabled, Wireless technologies so on.

TEXT BOOKS:

1. Alexis Leon, “ERP demystified”, second Edition Tata McGraw-Hill, 2007.

REFERENCE BOOKS:

1. Jagan Nathan Vaman, “ERP in Practice”, Tata McGraw-Hill, 2008
2. Alexis Leon, “Enterprise Resource Planning”, second edition, Tata McGraw-Hill, 2008.
3. Mahadeo Jaiswal and Ganesh Vanapalli, “ERP Macmillan India”, 2009.
4. Vinod Kumar Grag and N.K. Venkitakrishnan, “ERP- Concepts and Practice”, Prentice Hall of India, 2nd edition, 2006.
5. Summer, “ERP”, Pearson Education, 2008.

INDIAN BANKING FINANCIAL SYSTEM

C	M
2	100

COURSE OBJECTIVES: Grasp how banks raise their sources and how they deploy it and manage the associated risks. Understand e-banking and the threats that go with it.

COURSE OUTCOMES: Price various types of loans proposed by banks to various prospective borrowers with different risk profiles and evaluate the performance of banks

UNIT I OVERVIEW OF INDIAN BANKING SYSTEM - Overview of Indian Banking System, Functions of banks, key Acts governing the functioning of Indian banking system – RBI Act 1934, Negotiable Instruments Act 1881, Banking Regulations Act 1948 – Rights and obligations of a banker, Overview of Financial statement of banks – Balance sheet and Income Statement.

UNIT II SOURCES AND APPLICATION OF BANK FUNDS - Capital adequacy, Deposits and non-deposit sources, Designing of deposit schemes and pricing of deposit services, application of bank funds – Investments and Lending functions, Types of lending – Fund based,

non-fund based, asset based – Different types of loans and their features, Major components of a typical loan policy document, Steps involved in Credit analysis, Credit delivery and administration, Pricing of loans, Customer profitability analysis.

UNIT III CREDIT MONITORING AND RISK MANAGEMENT - Need for credit monitoring, Signals of borrowers' financial sickness, Financial distress prediction models – Rehabilitation process, Risk management – Interest rate, liquidity, forex, credit, market, operational and solvency risks – risk measurement process and mitigation, Basic understanding of NPAs and ALM.

UNIT IV MERGERS, DIVERSIFICATION AND PERFORMANCE EVALUATION - Mergers and Diversification of banks into securities market, underwriting, Mutual funds and Insurance business, Risks associated therewith. Performance analysis of banks – background factors, ratio analysis and CAMELS.

UNIT V e-BANKING - Payment system in India – Paper based, e-payments – Electronic banking – advantages – Plastic money, E-money – Forecasting of cash demand at ATMs – Security threats in e-banking and RBI's initiatives.

TEXT BOOKS:

1. Padmalatha Suresh and Justin Paul, "Management of Banking and Financial Services", Pearson, Delhi, 2012.
2. Meera Sharma, "Management of Financial Institutions – with emphasis on Bank and Risk Management", PHI Learning Pvt. Ltd., New Delhi, 2010.

REFERENCE BOOKS:

1. Peter S. Rose and Sylvia C. and Hudgins, "Bank Management and Financial Services", Tata McGraw Hill, New Delhi, 2012.

SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

C	M
2	100

COURSE OBJECTIVE:

Security Analysis and Portfolio Management concerns itself with investment in financial assets with specific attention to the returns and risk associated with investing in securities. The subject is aimed at providing insight to the various analytical techniques used in evaluation of the various investment opportunities. The course also provides of extension of these concepts to the portfolio of securities and the concept of diversifi

cation, management of a portfolio.

COURSE OUTCOME: The objective of this course is to familiarize the participants with the stock markets of India, its terminology, types of securities, the determinants of the price behaviour of securities, evaluation of fair price, and to provide a conceptual insight to the valuation of securities.

UNIT I INVESTMENT SETTING - Financial and economic meaning of Investment – Characteristics and objectives of Investment – Types of Investment – Investment alternatives – Choice and Evaluation – Risk and return concepts.

UNIT II SECURITIES MARKETS - Financial Market - Segments – Types - Participants in financial Market – Regulatory Environment, Primary Market – Methods of floating new issues, Book building – Role of primary market – Regulation of primary market, Stock exchanges in India – BSE, OTCEI, NSE, ISE, and Regulations of stock exchanges – Trading system in stock exchanges –SEBI.

UNIT III FUNDAMENTAL ANALYSIS - Economic Analysis – Economic forecasting and stock Investment Decisions – Forecasting techniques. Industry Analysis : Industry classification, Industry life cycle – Company Analysis Measuring Earnings – Forecasting Earnings – Applied Valuation Techniques – Graham and Dodds investor ratios.

UNIT IV TECHNICAL ANALYSIS - Fundamental Analysis Vs Technical Analysis – Charting methods – Market Indicators. Trend – Trend reversals – Patterns - Moving Average – Exponential moving Average – Oscillators – Market Indicators – Efficient Market theory.

UNIT V PORTFOLIO MANAGEMENT - Portfolio analysis –Portfolio Selection – Capital Asset Pricing model – Portfolio Revision –Portfolio Evaluation – Mutual Funds.

TEXT BOOKS:

1. Donald E.Fischer & Ronald J.Jordan, "Security Analysis & Portfolio Management", PHI Learning., New Delhi, 8th edition, 2011.
2. Prasannachandra, "Investment analysis and Portfolio Management", Tata McGraw Hill, 2011.

REFERENCE BOOKS:

1. Reilly & Brown, "Investment Analysis and Portfolio Management", Cengage Learning, 9th edition, 2011.

2. S. Kevin, "Securities Analysis and Portfolio Management", PHI Learning, 2012.
3. Bodi, Kane, Markus, Mohanty, "Investments", 8th edition, Tata McGraw Hill, 2011.
4. V. A. Avadhan, "Securities Analysis and Portfolio Management", Himalaya Publishing House, 2011.
5. V. K. Bhalla, "Investment Management", S. Chand & Company Ltd., 2012.

HIRE PURCHASE, LEASING AND VENTURE CAPITAL

C	M
2	100

COURSE OBJECTIVE: To understand the basic concepts of leasing and the dynamics of venture capital funds in Indian perspectives on fast emerging opportunities.

COURSE OUTCOME: Students are enabled to identify a great start up with high probability success and their valuation techniques.

UNIT I INTRODUCTION - Hire purchase fi nance- defi nition –Hire purchase Vs installment payment –Rights of Hire- Rate of interest –Methods of interest calculation –Hire purchase Act 1972 –Legal and tax aspects –Accounting and fi nancial evaluation.

UNIT II LEASING - Leasing –Defi nition and characteristics – Cash fl ow of a lease –Lease debt equivalence –Types of lease –Financial lease and operating lease- Leasing process- advantages of leasing – Limitations –Legal and tax implications of leasing –Lease evaluation by lessor and lessee.

UNIT III VENTURE CAPITAL - Venture capital meaning and defi nition – Features –Origin and growth of venture capital- Seed capital and startup fi nancing –Key factors for consideration for appraisal –Management buy-outs and buy-in stages of venture capital fi nancing-Financial analysis –Recommen-dation of SEBI (Chandrasekar committee) 2000; SEBI venture capital Funds Regulations'1996- SEBI Foreign venture capital investors regulations 2000.

UNIT IV INVESTMENT PROCESS - Assessing venture capital –Choosing a venture capital fi rm-The investment process –Preparing for the investment process –term sheet-Investment structure-Selection of investment-Syndication –Milestones- Equity participation –Provisions relating to share capital –Transfer restrictions –Transfer pre-emption rights and tag along rights –structuring the deal/fi nancial instruments –Investments, after care valuation of portfolio –Structural

aspects-exit.

UNIT V CORPORATE VENTURING - Corporate venturing – Framing and managing the venturing process –selecting opportunities- Locating the venture in the organization –Developing the business plan – Organising and controlling the venture.

REFERENCE BOOKS:

1. Dr. S. Gurusamy, "Merchant Banking and Financial Services", Thomson, 3rd edition, 2010.
2. Rupert Pearce and Simon Barnes, "Raising Venture Capital", John Wiley & Sons, Ltd, 2006.
3. Zenas Block & Lan.C.Macmillan, "Corporate Venturing", Harvard Business School Press, 2003.

**FINANCIAL SERVICES MANAGEMENT
SEMESTER – IV**

INSURANCE AND RISK MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: This course introduces the concept of risk and techniques of identifying, measuring and managing it. In this context, insurance as a risk management tool is discussed with references to its role, functions and basic principles as applicable to different classes of insurance.

COURSE OUTCOME: The course aims to provide the students with a broad understanding of risk and insurance as a means to manage it. This forms the foundation to facilitate the students in their further studies on insurance.

UNIT I INTRODUCTION TO RISK MANAGEMENT - Risk - Types of Risk – Objectives of risk management – Sources of risk – Risk Identification – Measurement of risk

UNIT II RISK AVERSION & MANAGEMENT TECHNIQUES - Risk Avoidance – Loss Control – Risk retention – risk transfer – Value of risk Management – Pooling and diversification of risk

UNIT III RISK MANAGEMENT TOOLS - Options – Forward contracts – Future contracts – SWAPS – Hedging – Optimal hedges for the real world.

UNIT IV INTRODUCTION TO INSURANCE - General Insurance – Principles of general insurance – General Insurance Products (Fire, Motor, Health) – Insurance Contracts – Objectives of Insurance Contracts –

Elements of a valid contract – Characteristics of Insurance Contracts – Insurance Pricing – Insurance Market & Regulation – Solvency regulation.

UNIT V INSURANCE AS A RISK MANAGEMENT TECHNIQUE - Insurance Principles – Policies – Insurance Cost & Fair Pricing – Expected claim costs – Contractual provisions that limit Insurance Coverage.

TEXT BOOKS:

1. Harrington and Niehaus, "Risk management and Insurance", Tata Mcgraw Hill Publishing, New Delhi, 3rd Edition, 2010.
2. Trieschman, Hoyt, Sommer, "Risk management and Insurance", Cengage Learning, 3rd Edition, 2011.

REFERENCE BOOKS:

1. Mark S. Dorfman, "Introduction to Risk management and Insurance", 10th Edition, Prentice Hall of India, 2012.
2. Stulz, "Risk Management and Derivaties", Cengage Learning, 2nd Edition, 2011.
3. Skipper and Kwon, "Risk management and Insurance", Blackwell Publishing, 2009.
4. Nalini Prave Tripathy, and Prabir Pal, "Insurance – Theory and Practice", Prentice Hall of India, 2010.
5. George E Rejda, "Principles of Risk Management and Insurance", Pearson Education, 12th Edition, 2013.

INTERNATIONAL TRADE FINANCE

C	M
2	100

COURSE OBJECTIVES: This course provides an overview of essential skills for managing financial transactions in an international trade. It covers practical applications of trade finance including: political and economic risks; foreign exchange tactics and risks; credit and payment risks; optimal terms of payment; arranging financing; and setting the business's overall financial plan. Material is presented in the form of readings, e-lectures, practical applications, and self assessments.

COURSE OUTCOME: It will enable to assess political and economic risks and cultural issues of the target country to establish the financial costs and viability. Evaluating foreign currency exchange risk and selecting, implementing, and managing risk mitigation techniques to protect the company against fluctuation of foreign exchange.

- UNIT I INTERNATIONAL TRADE** - International Trade – Meaning and Benefits – Basis of International Trade – Foreign Trade and Economic Growth – Balance of Trade – Balance of Payment – Current Trends in India – Barriers to International Trade – WTO – Indian EXIM Policy.
- UNIT II EXPORT AND IMPORT FINANCE** - Special need for Finance in International Trade – INCO Terms (FOB, CIF, etc..) – Payment Terms – Letters of Credit – Pre Shipment and Post Shipment Finance – Forfeiting – Deferred Payment Terms – EXIM Bank – ECGC and its schemes – Import Licensing – Financing methods for import of Capital goods.
- UNIT III FOREX MANAGEMENT** - Foreign Exchange Markets – Spot Prices and Forward Prices – Factors influencing Exchange rates – The effects of Exchange rates in Foreign Trade – Tools for hedging against Exchange rate variations – Forward, Futures and Currency options – FEMA – Determination of Foreign Exchange rate and Forecasting.
- UNIT IV DOCUMENTATION IN INTERNATIONAL TRADE** - Export Trade Documents: Financial Documents – Bill of Exchange- Type- Commercial Documents - Proforma, Commercial, Consular, Customs, Legalized Invoice, Certificate of Origin Certificate Value, Packing List, Weight Certificate, Certificate of Analysis and Quality, Certificate of Inspection, Health certificate. Transport Documents - Bill of Lading, Airway Bill, Postal Receipt, Multimodal Transport Document. Risk Covering Document: Insurance Policy, Insurance Cover Note. Official Document: Export Declaration Forms, GR Form, PP Form, COD Form, Softer Forms, Export Certification, GSPS – UPCDC Norms.
- UNIT V EXPORT PROMOTION SCHEMES** - Government Organizations Promoting Exports – Export Incentives : Duty Exemption-IT Concession – Marketing Assistance – EPCG, DEPB – Advance License – Other efforts in Export Promotion – EPZ – EQU – SEZ and Export House.

TEXT BOOKS:

1. Apte P.G., "International Financial Management", Tata McGraw Hill, 5th edition, 2011.
2. Jeff Madura, "International Corporate Finance", Cengage Learning, 10th Edition, 2011.

REFERENCE BOOKS:

1. Alan C. Shapiro, "Multinational Financial Management", PHI Learning, 8th Edition, 2010.

2. Eun and Resnik, "International Financial Management", Tata Mcgraw Hill, 5th Edition, 2011.
3. Website of Indian Government on EXIM policy.

FINANCIAL DERIVATIVES MANAGEMENT

C	M
2	100

COURSE OBJECTIVES: To understand the nuances involved in derivatives and to understand the basic operational mechanisms in derivatives.

COURSE OUTCOME: This course aims at providing an in-depth understanding of financial derivatives in terms of concepts, structure, instruments and trading strategies for profit and risk management.

UNIT I INTRODUCTION - Derivatives – Definition – Types – Forward Contracts – Futures Contracts – Options – Swaps – Differences between Cash and Future Markets – Types of Traders – OTC and Exchange Traded Securities – Types of Settlement – Uses and Advantages of Derivatives – Risks in Derivatives.

UNIT II FUTURES CONTRACT - Specifications of Futures Contract - Margin Requirements – Marking to Market – Hedging using Futures – Types of Futures Contracts – Securities, Stock Index Futures, Currencies and Commodities – Delivery Options – Relationship between Future Prices, Forward Prices and Spot Prices.

UNIT III OPTIONS - Definition – Exchange Traded Options, OTC Options – Specifications of Options – Call and Put Options – American and European Options – Intrinsic Value and Time Value of Options – Option payoff, options on Securities, Stock Indices, Currencies and Futures – Options pricing models – Differences between future and Option contracts.

UNIT IV SWAPS - Definition of SWAP – Interest Rate SWAP – Currency SWAP – Role of Financial Intermediary – Warehousing – Valuation of Interest rate SWAPs and Currency SWAPs Bonds and FRNs – Credit Risk.

UNIT V DERIVATIVES IN INDIA - Evolution of Derivatives Market in India – Regulations - Framework – Exchange Trading in Derivatives – Commodity Futures – Contract Terminology and Specifications for Stock Options and Index Options in NSE – Contract Terminology and specifications for stock futures and Index futures in NSE – Contract Terminology and Specifications for Interest Rate Derivatives.

TEXT BOOKS:

1. John. C. Hull, Options, "Futures and Other Derivative Securities", PHI Learning, 9th Edition, 2012
2. Keith Redhead, "Financial Derivatives – An Introduction to Futures, Forwards, Options and SWAPs",– PHI Learning, 2011.

REFERENCE BOOKS:

1. Stulz, "Risk Management and Derivaties", Cengage Learning, 2nd Edition, 2011.
2. Varma, "Derivaties and Risk Management", 2ndt Edition, 2011.
3. David Dubofsky – "Option and Financial Futures – Valuation and Uses", McGraw Hill International Edition.
4. S. L. Gupta, "Financial Derivaties- Theory, Concepts and Practice", Prentice Hall of India, 2011.
5. Website of NSE, BSE.

STRATEGIC INVESTMENT AND FINANCING DECISIONS

C	M
2	100

COURSE OBJECTIVES: Enable students to acquire techniques of evaluating strategic investment decisions understand the causes of prediction modes of fi nancial distress.

COURSE OUTCOME: Possess good knowledge in techniques for making strategic investment decision and tackling fi nancial distress

UNIT I INVESTMENT DECISIONS - Project Investment Management Vs Project Management – Introduction to profi table projects – evaluation of Investment opportunities – Investment decisions under conditions of uncertainty – Risk analysis in Investment decision – Types of investments and disinvestments.

UNIT II CRITICAL ANALYSIS OF APPRAISAL TECHNIQUES - Signifi cance of Information and data bank in project selections – Investment decisions under capital constraints – capital rationing, Portfolio – Portfolio risk and diversifi ed projects.

UNIT III STRATEGIC ANALYSIS OF SELECTED INVESTMENT DECISIONS - Lease fi - nancing – Lease Vs Buy decision – Hire Purchase and installment decision – Hire Purchase Vs Lease Decision – Mergers and acquisition – Cash Vs Equity for mergers.

UNIT IV FINANCING DECISIONS - Capital Structure – Capital structure theories – Capital structure Planning in Practice.

UNIT V FINANCIAL DISTRESS - Consequences, Issues, Bankruptcy, Settlements, reorganization and Liquidation in bankruptcy.

TEXT BOOKS:

1. Prasanna Chandra, "Financial Management", Tata McGraw Hill, 9th Edition, 2012.
2. Prasanna Chandra, "Projects : Planning, Analysis, Financing Implementation and Review", TMH, New Delhi, 2011.

REFERENCE BOOKS:

1. Bodie, Kane, "Marcus : Investment", Tata McGraw Hill, New Delhi, 2010.
2. Brigham E. F & Houston J.F., "Financial Management", Thomson Publications, 9th edition, 2010.
3. I. M. Pandey, "Financial Management" , Vikas Publishing House, 10th edition, 2010.
4. M. Y. Khan and P. K. Jain, "Financial Management Text and Problems", Tata McGraw Hill Publishing Co, 2011.
5. Website of IDBI Related to Project Finance

ENTREPRENEURIAL FINANCE

C	M
2	100

COURSE OBJECTIVE: This course examines the corporate finance issues confronting entrepreneurial firms. The primary areas of study for the course are: financial forecasting, identification and evaluation of real options, assessment of financial needs, and valuation.

COURSE OUTCOME: This course is intended to be 'hands on' and provide a theoretical framework useful for addressing typical financial issues of entrepreneurial ventures.

UNIT I INTRODUCTION - Entrepreneurial finance – meaning – steps in Project formulation, Feasibility report, Business Plan – meaning, needs and content – Factors contributing to successful implementation of Business Plan.

UNIT II LEGAL DIMENSION - Forms of business and their taxation issues – overall view of important Acts having financial implication on business – Companies Act, Payment of Wages Act, Minimum Wages Act, Payment of Bonus Act, Provident Fund Act, Profession Tax Act,

Payment of Gratuity Act, ESI Act, Workmen's Compensation Act, Intellectual Property Rights – meaning and types – Developing IP strategy.

UNIT III PROJECT APPRAISAL, FINANCIAL PLANNING AND ANALYSIS - Project appraisal methods – Payback Period, Accounting Rate of Return, Discounted cash flow techniques – Risk incorporation techniques, Methods of minimizing risks, Overrun analysis, Establishing priorities in capital allocation, Financial planning – Capital structure and Working capital – Methods of estimating costs, Estimating operating revenue and project cost, Errors in cost estimation, Projected Income statement and Balance Sheet, Financial analysis – Fund flow, Cash flow and Ratio analysis, Break even analysis, Leverages, Budget and Budgetary control – Adjustment for inflation, Social Cost Benefit (SCB) analysis – meaning, Difference between Financial and SCB analysis, Mechanism and criticism of SCB analysis.

UNIT IV FINANCING OF VENTURES - Different stages of financing – Seed, Expansion and Mezzanine – Sources of finance – Equity, Bootstrapping, Debentures, Angel funding, Venture capital and Lease financing, Bank loans – different types of fund-based and non fund-based facilities – Financial institutions funding, Financial assistance to women entrepreneurs, Financial incentives and facilities available to entrepreneurs.

UNIT V MANAGING GROWTH AND FINANCIAL SICKNESS - Venture life cycle, Growth sources, Growth strategies and their funding – Franchising, Licensing, Exporting, Joint Ventures, Mergers and Acquisitions, Leveraged Buyouts - Business Valuation – need and approaches, Going public through IPO, Steps involved in issuing IPO, Rating of IPOs, Symptoms and causes of sickness, Rehabilitation measures and Turnaround strategies.

TEXT BOOKS:

1. Arya Kumar, "Entrepreneurship", Pearson Education, New Delhi, 2012.
2. Gupta S.L. and Arun Mittal, "Entrepreneurship Development", International Book House Pvt. Ltd., New Delhi, 2011.

REFERENCE BOOKS:

1. Steven Rogers, "Entrepreneurial Finance", Tata McGraw Gill, New Delhi, 2011.
2. Gupta C.B. and Srinivasan N.P., "Entrepreneurship Development in India", Sultan Chand and Sons, New Delhi, 2010.
3. Philip J. Adelman, "Entrepreneurial Finance", Pearson Education, New Delhi, 6th edition, 2013.

**HEALTH SERVICES MANAGEMENT
SEMESTER – III**

APPLIED OPERATIONS RESEARCH

C	M
4	100

COURSE OBJECTIVE: Students learn about linear programming and extensions of LP models and the optimization algorithms. Helps students learn the replacement model, sequencing problems and processing of 'n' jobs through 'm' machines.

COURSE OUTCOME: Enable students to make decisions under conditions of certainty and uncertainty. Improves the ability to formulate effective models for real world OR problems.

UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP) - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.

UNIT II LINEAR PROGRAMMING EXTENSIONS - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.

UNIT III INTEGER LINEAR PROGRAMMING AND GAME THEORY - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.

UNIT IV INVENTORY MODELS, SIMULATION AND DECISION THEORY - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.

UNIT V QUEUING THEORY AND REPLACEMENT MODELS - Queuing Theory - single and Multi-channel models – infinite number of customers and infinite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

TEXT BOOKS:

1. Paneerselvam R., Operations Research, Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, Operations Research, Pearson Education, First Indian Reprint, 2012.
3. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, 9th Edition, Third Indian Reprint 2010.

REFERENCE BOOKS:

1. Sankara Iyer P, Operations Research, Tata Mcgraw Hill, 2008.
2. Frederick & Mark Hillier, Introduction to Management Science – A Modeling and case studies approach with spreadsheets, Tata Mcgraw Hill, 3rd edition, 2007.
3. Gupta P.K, Hira D.S, Problem in Operations Research, S.Chand and Co, 2010.
4. Kalavathy S, Operations Research, 3rd Edition, Vikas Publishing House, 2013.
5. Richard Broson , Govindasamy & Naachimuthu , Operations Research, Schaum’s outline series, II Edition, 2000.

INTERNATIONAL BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Students become familiar with the theoretical background of international business. To understand the economic, cultural and ethical issues relating to international business.

COURSE OUTCOME: Enable students to apply theory it in a variety of ways to varied international business situations, formulate frameworks for complex cross-border decision making

UNIT I INTRODUCTION - International Business –Definition – Internationalizing business-Advantages –factors causing globalization of business- international business environment – country attractiveness –Political, economic and cultural environment – Protection Vs liberalization of global business environment.

UNIT II INTERNATIONAL TRADE AND INVESTMENT - Promotion of global business – the role of GATT/WTO – multilateral trade negotiation and agreements – VIII & IX, round discussions and agreements – Challenges for global business –global trade and investment – theories of international trade and theories of international investment – Need for global competitiveness – Regional trade block – Types – Advantages and disadvantages – RTBs across the globe – brief history.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT - Strategic compulsions- Standardization Vs Differentiation – Strategic options – Global portfolio management- global entry strategy – different forms of international business – advantages- organizational issues of international business – organizational structures – controlling of international business – approaches to control – performance of global business- performance evaluation system.

UNIT IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS - Global production –Location –scale of operations- cost of production – Make or Buy decisions – global supply chain issues – Quality considerations- Globalization of markets, marketing strategy – Challenges in product development , pricing, production and channel management- Investment decisions – economic- Political risk – sources of fund- exchange – rate risk and management – strategic orientation – selection of expatriate managers- Training and development – compensation.

UNIT V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT - Disadvantages of international business – Confl ict in international business- Sources and types of confl ict – Confl ict resolutions – Negotiation – the role of international agencies –Ethical issues in international business – Ethical decision-making.

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, International Business, 6th edition, Tata Mc Graw Hill, 2009.
2. John D. Daniels and Lee H. Radebaugh, International Business, Pearson Education Asia, New Delhi, 13th editon, 2010.
3. K. Aswathappa, International Business, Tata Mc Graw Hill, 2008.
4. Michael R. Czinkota, Ilkka A. Ronkainen and Michael H. Moffet, International Business, Thomson, Bangalore, 8th edition, 2009.
5. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, International Management, Tata Mc Graw Hill, 2nd edition, 2008.
6. Oded Shenkar and Yaong Luo, International Business, John Wiley Inc, Noida, 2nd edition, 2007.

STRATEGIC MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Strategic Management, Globalisation, Competitive Advantage, Implementation Strategies, Evaluation and Issues of Non-Profit Organisations.

COURSE OUTCOME: Enhanced strategy formulations, Strategy implementations, evaluation procedures, New Business Models.

UNIT I STRATEGY AND PROCESS - Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.

UNIT II COMPETITIVE ADVANTAGE - External Environment - Porter's Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution- Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage-Case study.

UNIT III STRATEGIES - The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy-Strategy in the Global Environment-Corporate Strategy-Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation- Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - McKinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.

UNIT IV STRATEGY IMPLEMENTATION & EVALUATION - The implementation process, Resource allocation, Designing organisational structure-Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.

UNIT V OTHER STRATEGIC ISSUES - Managing Technology and Innovation- Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study

TEXT BOOKS:

1. Thomas L. Wheelen, J.David Hunger and Krish Rangarajan, Strategic Management and Business policy, Pearson Education., 11th edition, 2007
2. Charles W.L.Hill & Gareth R.Jones, Strategic Management Theory, An Integrated approach, Biztantra, Wiley India,6th edition, 2007.
3. Azhar Kazmi, Strategic Management & Business Policy, Tata McGraw Hill, Third Edition, 2008.

REFERENCE BOOKS:

1. Fred.R.David, Strategic Management and cases, PHI Learning, 13th edition, 2010.
2. Upendra Hachru , Strategic Management concepts & cases , Excel Books, 8th edition, 2006.
3. Adriaux HAberberg and Alison Rieple, Dstrategic Management Theory & Application, Oxford University Press, 2008.
4. Arnolddo C.Hax and Nicholas S. Majluf, The Strategy Concept and Process – A Pragmatic Approach, Pearson Education, Second Edition, 2005.
5. Harvard Business Review, Business Policy – part I & II, Harvard Business School.
6. Saloner and Shepard, Podolny, Strategic Management, John Wiley, 2005.
7. Lawrence G. Hrebiniak, Making strategy work, Pearson, 2005.
8. Gupta, Gollakota and Srinivasan, Business Policy and Strategic Management – Concepts and Application, Prentice Hall of India, 2nd edition, 2007.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE: To understand about ERP systems, ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

COURSE OUTCOME: Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP systems.

UNIT I INTRODUCTION - Overview of enterprise systems – Evolution - Risks

and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems

UNIT II ERP SOLUTIONS AND FUNCTIONAL MODULES - Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.

UNIT III ERP IMPLEMENTATION - Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.

UNIT IV POST IMPLEMENTATION Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation

UNIT V EMERGING TRENDS ON ERP - Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics etc- Future trends in ERP systems- web enabled, Wireless technologies so on.

TEXT BOOKS:

1. Alexis Leon, ERP demystifi ed, second Edition Tata McGraw-Hill, 2007.

REFERENCE BOOKS:

1. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008
2. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
3. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009.
4. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, Prentice Hall of India,2nd edition, 2006.
5. Summer, ERP, Pearson Education, 2008.

MATERIALS MANAGEMENT AND LOGISTICS IN HEALTH CARE

C	M
2	100

COURSE OBJECTIVE: To understand Hospital Inventory Management, Logistics Management, Purchasing Activities, Warehousing and Supply Chain Management Concepts.

COURSE OUTCOME: Clear view of how Inventory is maintained, Auditing on

Marketing and Logistics, Electronic Data Interchange.

- UNIT I INTRODUCTION TO MATERIALS MANAGEMENT** -Introduction to principles of material management, Hospital Inventory management: Definition of inventory- Need, objectives, scope & importance, impact on profitability of the organization, types of hospital inventories, categories of materials in hospitals, classification of un-expendable items, hospital maintenance items, spare parts stocking policies for capital items.
- UNIT II LOGISTICS ROLE IN THE ECONOMY AND THE FIRM** - Logistics Management – Role in the economy and in firms – Development of Logistics Management – the Integrated Logistics Management Concept – Logistics and the Marketing function – The total cost concept – Logistics and corporate Profit performance – the financial Impact of Logistics Decision – Conducting a Logistics and Marketing audit – developing a Logistics Strategy - Future Challenges.
- UNIT III PURCHASING** - Purchasing activities – supplier Selection and Evaluation – Quality Control – forward Buying just – in – time Purchasing- Benefits of JIT Purchasing Research and Planning – Purchasing cost management Measurement and Evaluation of Purchasing Performance – Order processing and Information systems – Customer order cycle – the communications function – Advanced order Processing systems – Inside Sales /Telemarketing Electronic Data Interchange (EDI) – Integrated Order Processing and the company's Logistics.
- UNIT IV WAREHOUSING** - Nature and Importance of Warehousing – type of Warehousing – A comparison of Public and Private warehousing – Warehousing Operations Facility Development – size and Number of Warehouses – Location Analysis – Warehouse Layout and Design – Package – computer Technology, Information and Warehouse Management – Warehouse Productivity Measurement – Improving Warehouse Productivity.
- UNIT V INTRODUCTION TO SUPPLY CHAIN MANAGEMENT (SCM)** - Concept of SCM, components, hospital supply chain management, global competitive scenario. Hospital Stores Organization, Objective, function, relevance and importance of store keeping, functions and responsibilities of stores, duties and responsibilities of store keeper, elements of good stores organization, stores organization in hospitals: centralized and decentralized stores.

REFERENCE BOOKS:

1. Shakti Gupta, Sunilkanth – Hospital Stores Management, Jaypee Brothers, 2004.
2. Srinivasan A.V. (ed), Managing a modern hospital, Chapters 6, 7, 8, 9, Response Books, New Delhi, 2nd edition, 2008.
3. Gopalakrishna, P., Materials Management, Prentice Hall, New Delhi, 2012.
4. Gopalakrishna, P., Purchasing and Materials Management, Tata MC.Graw Hill, New Delhi, 12th edition, 2006.
5. Prof. L.C. Jhamb, Materials & Logistic Management, Everest Publications, 2005.
6. P. Gopalakrishnan, Stores, Management & Logistics, Sultanchand & Co., New Delhi, 1978.

MANAGEMENT OF HEALTH CARE SERVICES

C	M
2	100

COURSE OBJECTIVE: To understand services in hospitals, Managing Front office operations in hospitals, Record Keeping, Waste disposal management, Pharmacy and ICU maintenance.

COURSE OUTCOME: Clear view on Hospital Systems in India, Emergency Communication System in Hospitals, Maintenance of Patient Records, Laboratory Accreditation Procedure.

UNIT I INTRODUCTION - Functional areas in hospital services management – Difference types of hospital services – Human capital in hospitals- Specific characteristics of hospital services- Principles of hospital planning and execution-Government – Private – Corporate and public hospital systems in India.

UNIT II MANAGING FRONT OFFICE - Front office –Administration of outpatient and inpatient – Emergency services in hospital-Communication system – Admission and discharge procedures.

UNIT III RECORDS MANAGEMENT - Significance of record keeping- Types of medical records – Management – Medical statistics – Materials records –Creation and management of patient records and personnel records – Discharge records – Legal and other operational records- Automated hospital services management solution.

UNIT IV LABORATORY SERVICES AND HOUSE KEEPING - Need for managing laboratories-Classification, functions and management of

laboratories – Accreditation of laboratory procedure and process – Case studies. Sanitation of hospital environment- Basic and special cleaning –Odor control Waste disposal –Safety – Pest control- Interior decoration – outsourcing hospital housekeeping services.

UNIT V **PHARMACY AND INTENSIVE CARE** - Location, layout and functions duties of Chief pharmacist – Equipment and facilities – Pricing –Drug information centre. Types of ICU – Functions and Objective – Daily Scheduling –Safety issues and other problems – Major responsibilities of nursing service – Relationship with non- nursing personnel.

REFERENCE BOOKS:

1. Goel, S.L and Kumar, Hospital Supportive Services Deep and Deep Publications, New Delhi, 2004.
2. NHS Guide to Good Practices in Hospital Administration National Health Services, London.
3. Syed Amin Tabish Hospital and Health Services Administration Jaypee Brothers Medical Publishers, New Delhi, 2001.
4. G. D. Kunders Designing for Total Quality in Healthcare Prism Books Pvt., Ltd, Bangalore,2004.

HEALTH INSURANCE

C	M
2	100

COURSE OBJECTIVE: To understand about Health Insurance Products, Designing, Types, Insurance Act, IRDA, Marketing and Servicing, Insurance Models.

COURSE OUTCOME: An understanding of Insurance Products, Significance of Claims, Regulations and Operations in Health Insurance, Application of Insurance Models.

UNIT I **INTRODUCTION** - History of Health Insurance, Principles of Health Insurance, Health Insurance Products, Product design, Development and Evaluation, current trends in Health Insurance - International and Indian scenario.

UNIT II **CLASSIFICATION OF HEALTH INSURANCE** - Concepts of insurance, life and nonlife, Public & private health insurance, Individual medi claim policy, domiciliary hospitalization, proposal questionnaire, Bhavishya Arogya policy, Jan Arogya Bima Policy, Cancer Insurance, Group Mediclaim Policy.

UNIT III **REGULATION AND OPERATIONS IN HEALTH INSURANCE** - The Insurance Act1938, IRDA- 1999, Introduction to Claims management, significance of claims settlement, nature of claims from various classes of insurance, role of Third Party Administrators.

UNIT IV MARKETING AND SERVICING OF HEALTH INSURANCE - Different elements of insurance marketing, uniqueness of insurance markets, distribution, Channels for selling insurance, agents, insurance broker, consultants, Banking outlets, Role of IRDA in supervising promotional activities.

UNIT V ACTUARIAL PRINCIPLES AND PREMIUM SETTING - Actuarial Principles – De-mography – Survival distributions and life tables – Interest and life contingencies – Loss distribution – Principles of Ratemaking - Data required for Ratemaking – Insurance Models – Application of Models – Current Developments. (Salient Features of above topics)

REFERENCE BOOKS:

1. Kenneth Black, Jr. Harold D. Skipper, Jr, Life and Health Insurance, Pearson Education Pvt. Ltd., Delhi, thirteenth edition, 2003.
2. Board of editors, Group and Health Insurance vol. I -III, the ICFAI University Press, Hyderabad, 2004.
3. U. Jawaharlal (editor), Insurance Industry, the current scenario, the ICFAI University Press, Hyderabad, 2005.
4. Insurance Products, Taxman Publications
5. Insurance Management - Dave
6. National Insurance - Monographs on Insurance Management
7. IRDA Guidelines on Health Insurance - Govt. of India

**HEALTH SERVICES MANAGEMENT
SEMESTER – IV**

LEGAL ASPECTS OF HEALTH CARE

C	M
2	100

COURSE OBJECTIVE: To Understand Laws relating to Health services, Nurse licensure, Legal reports, Risk Management, AIDS.

COURSE OUTCOME: An understanding of Ethical issues in Health care, Labour rights, Privileges of medical staffs, Licensing Healthcare Professionals.

UNIT I INTRODUCTION - Introduction to law – Sources of law – Contract and antitrust – Purpose of contract – Types of contracts – Legality of object – Conditions – Remedies – Contracts of Adhesion – Employment contracts – Restraint of trade – Civil procedure and trial practice – Discovery and examination before trial – Memorandum of law – Evidence – Jury deliberation and determination – Damages – Appeals – Execution of judgments – Corporate liability – Authority of health care corporation – Duties of

health care corporations.

UNIT II PERSONNEL - Medical staff – Organization – Privileges – Bylaws – Reappointments – Physician-patient relationship – Nursing and law – Practice of nursing – Nurse licensure – Nurse practice roles - Liability by departments and health care professionals – Ambulatory care centers – Emergency departments – Certification of Health care professionals – Licensing Health care professionals.

UNIT III INFORMATION MANAGEMENT - Introduction – Managing information – Patient consent – Consent definition – Patient self-determination act – Proof of consent – Refusal of treatment – Statutory consent – Consent and judicial intervention – Defence and failure to inform - Legal reporting requirements – Child abuse – Communicable diseases – Births and deaths – Risk management and incident reporting.

UNIT IV PROTECTION - Issues of Procreation – Circuit and district court decisions – Wrongful birth, life, and conception – Patient rights and responsibilities – Patient rights – Admission – Discharge – Transfer – Patient bill of rights – Patient responsibilities – Patient Advocacy – Acquired immune deficiency syndrome – AIDS and health care workers – AIDS and the right to know – The right to treatment – News media and confidentiality – Negligence – Occupational safety and health act.

UNIT V ETHICS - Health care ethics – Ethics committee – End of life issues – Organ donations – Malpractice insurance - Insurance policy – Liability of professional – Medical Liability Insurance – Self insurance – Medical staff insurance coverage – Labour relations – Unions and health care organization – Labour rights – Patients rights during labour disputes – Employment discipline and discharge – Public policy issues – Interference with employment activities – Fairness

REFERENCE BOOKS:

1. George D Pozgar, "Legal Aspects of Health Care", Ninth edition, Jones and Bartlett Publishers, Inc, 2012.
2. Dana C Mcway, "Legal Aspects of Health Information Management", Thomson Delmar Learning, Second Edition, 2009.

INTERNATIONAL HEALTH MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To know and understand the international health Scenario and healthcare delivery process and also to develop perspectives for health product and services to go global.

COURSE OUTCOME: WIPO role in new patent regime, Regulations in Health Policy formulations, Access to low income segments and Rural Healthcare.

UNIT I HEALTHCARE – A GLOBAL PERSPECTIVE - Healthcare challenges – a global perspective- Wide gap in healthcare delivery – Role of International agencies - Healthcare financing in developed and developing countries – Developing National health Accounts – application in developing countries.

UNIT II THE REFORMS OF HEALTHCARE SYSTEM - Evolutionary reform (Italy, Portugal, Greece, Australia, etc) in Healthcare- Structural reforms in Healthcare (New Zealand, Sweden, Switzerland and United States etc.) International convergence in Health care system – Health sector reforms, lessons from different countries.

UNIT III SYSTEMS OF HEALTH CARE DELIVERY - Basic components of health services – Transition from traditional insurance to managed care – Trends and Directions – Significance for health care practitioners and policy makers – Complying with regulations – Health care systems in other countries

UNIT IV INTELLECTUAL PROPERTY RIGHTS - TRIPS – IPR - The Patent Cooperation Treaty (PCT) – PCT system – PCT for product design – World Intellectual Property Organisation (WIPO) and its role in new patent regime – International Registration of Trademarks

UNIT V HEALTH POLICY - Health policy – Definition – Different forms of Health policies - Regulatory tools – government as a subsidiary to the private sector – Reforms in the healthcare sector – Decentralized role of the States – Access to healthcare – providers – in rural areas, low income segments – Cost of Care - Quality of care.

REFERENCE BOOKS:

1. Leiyu Shi and Douglas A Singh, Delivering Health Care in America- A systems Approach, Third Edition, Oxford Textbook of Public Health, Volume Three,2011.

2. J.E. Park, Textbook of Preventive and Social Medicine (1997), 15th edition 3. Blane, David, Brunner, Eric, Health and Social Organisation: Towards a health policy for the 21st century, Calrendon Press, 2002.

MEDICAL EQUIPMENT MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Subject is intended to cover the Operations and Maintenance aspects with reference to minimum Utilization of resources in a hospital.

COURSE OUTCOME: Imbibes knowledge on advanced technology in diagnostics and Therapeutics, Quality control applications in Hospital.

UNIT I INTRODUCTION TO MEDICAL EQUIPMENT - List of common medical equipments, Justifi cation of purchase proposal, hospital need assessment, Equipment selection guideline, estimation of cost and planning, purchase, installation, commissioning, Replacement and buy back policy, International and indigenous standards

UNIT II OPERATIONS STRATEGY - Operations strategy a competitive tool, elements, technology selection and process: development, developing operations strategy. Operations of clinical services, supportive services, and administrative services general introduction to the various specialties, super specialties and other subspecialties

UNIT III VALUE MANAGEMENT - Value engineering, value analysis, quality control, applications in hospital.

UNIT IV TECHNOLOGY MANAGEMENT IN HOSPITALS - Evolution of technology in hospitals, advanced technology in diagnostics and therapeutics, telemedicine concepts and applications, artifi cial intelligence and robotics in Healthcare.

UNIT V MAINTENANCE MANAGEMENT - Objectives, types of maintenance systems, equipment maintenance, quality and reliability, equipment history and documents, maintenance planning, maintenance information system, maintenance and monitoring of biomedical equipments, predictive maintenance, equipment availability, spares management, replacement policy, depreciation and loss of value, economic life, costing, cost of standby, maintenance in hospital. Bio-Medical Technology, application in hospital environment, calibration tests, maintenance features, hazards.

REFERENCE BOOKS:

1. Barry, Jay Hazier, Principles of Operations Management, Prentice Hall, New Jersey, 9th edition, 2013.
2. Medical Technology, application in hospital environment, calibration tests, maintenance of hazards Srinivasan A.V. (ed), Managing a modern hospital, Chapters 12, Response Books, New Delhi, 3. Roger G., Operations Management - Decision Making in Operations Function, RawHill, New Delhi, 1993.
3. I, Elwood S. and Sarin, Rakesh K., Modern Production/Operations Management, John Wiley & Sons, Singapore, 1987.
4. Lee J. and Larry p. Ritzman, Operations Management - Strategy and Analysis, Wesley Publications, 2002.
5. International Journal of Operations and Quantitative Management, (IJOQM) released by Nirma Institute of Management – Ahmadabad

MEDICAL TOURISM

C	M
2	100

COURSE OBJECTIVE: To understand the Significance of Medical Tourism, Role of government, Communication for medical tourists.

COURSE OUTCOME: Effects of medical tourism in nation's economy, Pricing of Medical Services, Emerging trends on Medical Tourism.

UNIT I INTRODUCTION - Medical tourism – significance- Medical tourism as industry- Medical tourism destinations – Types and flow of medical tourists- Factors influencing choice of medical tourism destinations.

UNIT II MACRO PERSPECTIVE - Effects of medical tourism in nation's economy – development of supporting services for medical tourism – role of government – Private sector – voluntary agencies in promotion of medical tourism.

UNIT III MARKETING STRATEGY - Strategy formulation to attract and retain national and global medical tourists – Positioning of Indian medical services – Traditional and nontraditional – Pricing of Medical Services.

UNIT IV COMMUNICATION - Integrated communication for medical tourists – Online and offline communications – Relationship management with medical tourists.

UNIT V EMERGING TRENDS - Understanding Medical tourist satisfaction – Protecting stakeholder's interests in medical - tourism – Emerging

trends.

REFERENCE BOOKS:

1. Milica Z., Bookman Karla R. Bookman, Medical Tourism in Developing Countries , Palgrave Macmillan tm 2007.
2. Raj Pruthi , Medical Tourism in India , Arise Publishers & Distributors, 2006.
3. RNCOS, Opportunities in Medical Tourism in India (2007), RNCOS E- Services Pvt. Ltd., 2006.
4. Michael D. Horowitz Jeffrey A. Rosensweig, Medical Tourism – Health Care in The Global Economy (Trends), Americal College of Physician Executive, 2007.

MEDICAL WASTE MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand about Health Care Waste, Legal guidelines on Waste Disposals, Coding different Wastes, Treatment and Disposal, Management issues, Maintenance of records and reports.

COURSE OUTCOME: Ensuring waste being recycled/disposed safely by proper guidelines.

UNIT I INTRODUCTION - Introduction – Definition – general and hazardous health care waste – infectious waste – genotoxic waste – waste sharps – bio medical waste – categories – composition of bio medical waste – specification of materials – sources – hospitals – health care establishments – others

UNIT II IMPACTS & LEGISLATION AND POLICIES - Health impacts – direct and indirect hazards – potential hazards – basic information – infection – infection agents – legislation and policies – bio medical waste handling – rules – CPCB guidelines – BARC guidelines – radioactive waste disposal – WHO guidelines – management in developing countries

UNIT III GENERATION AND SEGREGATION - Color coding – yellow, red – blue, white – contents of waste bag – label – biomedical waste – minimize – collection and handling – infection control system – needle sticks injury – hospital policy - segregation – decontaminating – disinfection unit – au-toclaving – sharp waste containers – shredding – incrimination – biomedical symbol – microwave – hy-dropulbing – plasma torch

UNIT IV TRANSPORTATION, TREATMENT AND DISPOSAL - Central storage - Onsite pre treatment – mechanical treatment – chemical

disinfection – offsite transportation – offsite and onsite – treatment – common treatment – liquid waste treatment – Conventional treatment – wet thermal technology – incineration – alternative treatment technology – microwave technology - rotoclave system – hydroclave – ETP – process electron beam treatment – plasma pyrolysis – gasification systems - non infectious waste – treatment – composting – rotating jumbling system – French composting - vermi composting – disposal – sharp disposal – deep burial – secured landfill

UNIT V **MANAGEMENT ISSUES** - Waste minimization – recycling – re use – health and safety practices – protective equipments usage – occupational health programmers – safety – emergency practices – management – non clinical support devices – hospital waste management – budget allocation – maintenance – records – annual reports

TEXT BOOKS:

1. D.B. Acharya, Meeta Singh, The Book of Hospital Management, Minerva Press, 2003.
2. Mohd Faisal Khan, Hospital Waste Management: Principle and Guidelines, Kanishka Publishers, 2010.

REFERENCE BOOKS:

1. Madhuri Sharma, Hospital Waste Management and its Monitoring, Jaypee Brothers Medical Publishers, 2007.
2. Mohammad Mohsin, Hospital : Waste Management, VDM Publishing, 2010.

**OPERATIONS MANAGEMENT
SEMESTER – III**

APPLIED OPERATIONS RESEARCH

C	M
4	100

COURSE OBJECTIVE: Students learn about linear programming and extensions of LP models and the optimization algorithms. Helps students learn the replacement model, sequencing problems and processing of 'n' jobs through 'm' machines.

COURSE OUTCOME: Enable students to make decisions under conditions of certainty and uncertainty. Improves the ability to formulate effective models for real world OR problems.

- UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP)** - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.
- UNIT II LINEAR PROGRAMMING EXTENSIONS** - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.
- UNIT III INTEGER LINEAR PROGRAMMING AND GAME THEORY** - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.
- UNIT IV INVENTORY MODELS, SIMULATION AND DECISION THEORY** - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.
- UNIT V QUEUING THEORY AND REPLACEMENT MODELS** - Queuing Theory - single and Multi-channel models – infi nite number of customers and infi nite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

TEXT BOOKS:

1. Paneerselvam R., Operations Research, Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, Operations Research, Pearson Education, First Indian Reprint, 2012.
3. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, 9th Edition, Third Indian Reprint 2010.

REFERENCE BOOKS:

1. Sankara Iyer P, Operations Research, Tata Mcgraw Hill, 2008.
2. Frederick & Mark Hillier, Introduction to Management Science – A Modeling and case studies approach with spreadsheets, Tata Mcgraw Hill, 3rd edition, 2007.
3. Gupta P.K, Hira D.S, Problem in Operations Research, S.Chand and Co, 2010.
4. Kalavathy S, Operations Research, 3rd Edition, Vikas Publishing House, 2013.
5. Richard Broson , Govindasamy & Naachimuthu , Operations Research, Schaum's outline series, II Edition, 2000.

INTERNATIONAL BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Students become familiar with the theoretical background of international business. To understand the economic, cultural and ethical issues relating to international business.

COURSE OUTCOME: Enable students to apply theory in a variety of ways to varied international business situations, formulate frameworks for complex cross-border decision making

UNIT I INTRODUCTION - International Business –Definition – Internationalizing business-Advantages –factors causing globalization of business- international business environment – country attractiveness –Political, economic and cultural environment – Protection Vs liberalization of global business environment.

UNIT II INTERNATIONAL TRADE AND INVESTMENT - Promotion of global business – the role of GATT/WTO – multilateral trade negotiation and agreements – VIII & IX, round discussions and agreements – Challenges for global business –global trade and investment – theories of international trade and theories of international investment – Need for global competitiveness – Regional trade block – Types – Advantages and disadvantages – RTBs across the globe – brief history.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT - Strategic compulsions-Standardization Vs Differentiation – Strategic options – Global portfolio management- global entry strategy – different forms of

international business – advantages- organizational issues of international business – organizational structures – controlling of international business – approaches to control – performance of global business- performance evaluation system.

UNIT IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS - Global production –Location –scale of operations- cost of production – Make or Buy decisions – global supply chain issues – Quality considerations- Globalization of markets, marketing strategy – Challenges in product development , pricing, production and channel management- Investment decisions – economic- Political risk – sources of fund- exchange – rate risk and management – strategic orientation – selection of expatriate managers- Training and development – compensation.

UNIT V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT - Disadvantages of international business – Confl ict in international business- Sources and types of confl ict – Confl ict resolutions – Negotiation – the role of international agencies –Ethical issues in international business – Ethical decision-making.

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, International Business, 6th edition, Tata Mc Graw Hill, 2009.
2. John D. Daniels and Lee H. Radebaugh, International Business, Pearson Education Asia, New Delhi, 13th editon, 2010.
3. K. Aswathappa, International Business, Tata Mc Graw Hill, 2008.
4. Michael R. Czinkota, Ilkka A. Ronkainen and Michael H. Moffet, International Business, Thomson, Bangalore, 8th edition, 2009.
5. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, International Management, Tata Mc Graw Hill, 2nd edition, 2008.
6. Oded Shenkar and Yaong Luo, International Business, John Wiley Inc, Noida, 2nd edition, 2007.

STRATEGIC MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Strategic Management, Globalisation, Competitive Advantage, Implementation Strategies, Evaluation and Issues of Non-Profi t Organisations.

COURSE OUTCOME: Enhanced strategy formulations, Strategy implementations, evaluation procedures, New Business Models.

- UNIT I STRATEGY AND PROCESS** - Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.
- UNIT II COMPETITIVE ADVANTAGE** - External Environment - Porter's Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution- Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage-Case study.
- UNIT III STRATEGIES** - The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy-Strategy in the Global Environment-Corporate Strategy-Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation- Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - McKinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.
- UNIT IV STRATEGY IMPLEMENTATION & EVALUATION** - The implementation process, Resource allocation, Designing organisational structure-Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.
- UNIT V OTHER STRATEGIC ISSUES** - Managing Technology and Innovation-Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study

TEXT BOOKS:

1. Thomas L. Wheelen, J.David Hunger and Krish Rangarajan, Strategic Management and Business policy, Pearson Education., 11th edition, 2007
2. Charles W.L.Hill & Gareth R.Jones, Strategic Management Theory, An Integrated approach, Biztantra, Wiley India,6th edition, 2007.
3. Azhar Kazmi, Strategic Management & Business Policy, Tata McGraw

Hill, Third Edition, 2008.

REFERENCE BOOKS:

1. Fred.R.David, Strategic Management and cases, PHI Learning, 13th edition, 2010.
2. Upendra Hachru , Strategic Management concepts & cases , Excel Books, 8th edition, 2006.
3. Adriaan H.Aberberg and Alison Rieple, Strategic Management Theory & Application, Oxford University Press, 2008.
4. Arnaldo C.Hax and Nicholas S. Majluf, The Strategy Concept and Process – A Pragmatic Approach, Pearson Education, Second Edition, 2005.
5. Harvard Business Review, Business Policy – part I & II, Harvard Business School.
6. Saloner and Shepard, Podolny, Strategic Management, John Wiley, 2005.
7. Lawrence G. Hrebiniak, Making strategy work, Pearson, 2005.
8. Gupta, Gollakota and Srinivasan, Business Policy and Strategic Management – Concepts and Application, Prentice Hall of India, 2nd edition, 2007.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE: To understand about ERP systems, ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

COURSE OUTCOME: Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP systems.

UNIT I INTRODUCTION - Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be considered in planning design and implementation of cross functional integrated ERP systems

UNIT II ERP SOLUTIONS AND FUNCTIONAL MODULES - Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.

UNIT III ERP IMPLEMENTATION - Planning Evaluation and selection of ERP

systems-Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.

UNIT IV POST IMPLEMENTATION Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation

UNIT V EMERGING TRENDS ON ERP - Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics etc- Future trends in ERP systems- web enabled, Wireless technologies so on.

TEXT BOOKS:

1. Alexis Leon, ERP demystified, second Edition Tata McGraw-Hill, 2007.

REFERENCE BOOKS:

1. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008
2. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
3. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009.
4. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, Prentice Hall of India, 2nd edition, 2006.
5. Summer, ERP, Pearson Education, 2008.

SUPPLY CHAIN MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To help understand the importance of and major decisions in supply chain management for gaining competitive advantage.

COURSE OUTCOME: Ability to build and manage a competitive supply chain using strategies, models, techniques and information technology.

UNIT I INTRODUCTION - Supply Chain – Fundamentals –Evolution- Role in Economy - Importance - Decision Phases - Supplier- Manufacturer-Customer chain. - Enablers/ Drivers of Supply Chain Performance. Supply chain strategy - Supply Chain Performance Measures.

UNIT II STRATEGIC SOURCING - Outsourcing – Make Vs buy - Identifying

core processes - Market Vs Hierarchy - Make Vs buy continuum - Sourcing strategy - Supplier Selection and Contract Negotiation. Creating a world class supply base- Supplier Development - World Wide Sourcing.

UNIT III **SUPPLY CHAIN NETWORK** - Distribution Network Design – Role - Factors Influencing Options, Value Addition – Distribution Strategies - Models for Facility Location and Capacity allocation. Distribution Center Location Models. Supply Chain Network optimization models. Impact of uncertainty on Network Design - Network Design decisions using Decision trees.

UNIT IV **PLANNING DEMAND, INVENTORY AND SUPPLY** - Managing supply chain cycle inventory. Uncertainty in the supply chain – Analysing impact of supply chain redesign on the inventory - Risk Pooling - Managing inventory for short life - cycle products -multiple item - multiple location inventory management. Pricing and Revenue Management

UNIT V **CURRENT TRENDS** - Supply Chain Integration - Building partnership and trust in SC Value of Information: Bullwhip Effect - Effective forecasting - Coordinating the supply chain. . SC Restructuring - SC Mapping -SC process restructuring, Postpone the point of differentiation – IT in Supply Chain - Agile Supply Chains -Reverse Supply chain. Agro Supply Chains.

TEXT BOOKS:

1. Janat Shah, Supply Chain Management – Text and Cases, Pearson Education, 2012.
2. Sunil Chopra and Peter Meindl, Supply Chain Management-Strategy Planning and Operation, PHI Learning / Pearson Education, 5th edition, 2012.

REFERENCE BOOKS:

1. Ballou Ronald H, Business Logistics and Supply Chain Management, Pearson Education, 5th edition, 2013.
2. David Simchi-Levi, Philip Kaminsky, Edith Simchi-Levi, Designing and Managing the Supply Chain: Concepts, Strategies, and Cases, Tata McGraw-Hill, 3rd edition, 2007.
3. Altekar Rahul V, Supply Chain Management-Concept and Cases, PHI, 2005.
4. Shapiro Jeremy F, Modeling the Supply Chain, Thomson Learning, Second Reprint, 2013.
5. Joel D. Wisner, G. Keong Leong, Keah-Choon Tan, Principles of Supply

Chain Management- A Balanced Approach, South-Western, Cengage Learning, 3rd edition, 2011.

LOGISTICS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To learn the need and importance of logistics in product flow.

COURSE OUTCOME: To enable an efficient method of moving products with optimization of time and cost.

UNIT I INTRODUCTION - Definition and Scope of Logistics – Functions & Objectives – Customer Value Chain – Service Phases and attributes – Value added logistics services – Role of logistics in Competitive strategy – Customer Service

UNIT II DISTRIBUTION CHANNELS AND OUTSOURCING LOGISTICS - Distribution channel structure - channel members, channel strategy, role of logistics and support in distribution channels. Logistics requirements of channel members. Logistics outsourcing – catalysts, benefits, value proposition. Third and fourth party logistics. Selection of service provider.

UNIT III TRANSPORTATION AND PACKAGING - Transportation System – Evolution, Infrastructure and Networks. Freight Management – Vehicle Routing – Containerization. Modal Characteristics, Inter-modal Operators and Transport Economies. Packaging- Design considerations, Material and Cost. Packaging as Unitisation. Consumer and Industrial Packaging.

UNIT IV PERFORMANCE MEASUREMENT AND COSTS - Performance Measurement – Need, System, Levels and Dimensions. Internal and External Performance Measurement. Logistics Audit. Total Logistics Cost – Concept, Accounting Methods. Cost – Identification, Time Frame and Formatting.

UNIT V CURRENT TRENDS - Logistics Information Systems – Need, Characteristics and Design. E-Logistics – Structure and Operation. Logistics Resource Management eLRM. Automatic Identification Technologies. Reverse Logistics – Scope, design and as a competitive tool. Global Logistics – Operational and Strategic Issues, ocean and air transportation. Strategic logistics planning. Green Logistics

TEXT BOOKS:

1. Bowersox Donald J, Logistics Management – The Integrated Supply Chain Process, Tata McGraw Hill, 4th edition, 2012
2. Sople Vinod V, Logistics Management – The Supply Chain Imperative, Pearson Education, 3rd Edition, 2012.

REFERENCE BOOKS:

1. Coyle et al., The Management of Business Logistics, Thomson Learning, 7th Edition, 2004.
2. Ailawadi C Sathish & Rakesh Singh, Logistics Management, PHI, 2012.
3. Bloomberg David J et al., Logistics, Prentice Hall India, 2005.
4. Pierre David, International Logistics, Biztantra, 2004.
5. Ronald H. Ballou, Business Logistics and Supply Chain Management, Pearson Education, 5th Edition, 2013.

PRODUCT DESIGN & DEVELOPMENT

C	M
2	100

COURSE OBJECTIVE: Understand the application of structured methods to develop a product

COURSE OUTCOME: Student gains knowledge on how a product is designed based on the needs of a customer

UNIT I INTRODUCTION - Defining Product, Types of products. Product development – characteristics, duration and cost, challenges. Development Process: Generic Process- Adapting to product types. Evaluation – decay curve – cost expenditure curve.

UNIT II PRODUCT PLANNING - Product Planning Process – Steps. Opportunity identification – breakdown structure- product development charter. Product Life Cycle. Technology Life Cycle - Understanding Customer Needs - Disruptive Technologies- Product Specification - Concept Generation – Activity- Steps- Techniques.

UNIT III PRODUCT CONCEPT - Concept Selection – Importance, Methodology, concept Screening, Concept Scoring. Concept Testing. Product Architecture- Definition, Modularity, implication, Establishment, Delayed Differentiation, Platform Planning.

UNIT IV INDUSTRIAL DESIGN AND DESIGN TOOLS - Industrial Design, Design for Manufacturing-Value Engineering-Ergonomics-Prototyping-

Robust Design- Design for X-failure rate curve-product use testing- Collaborative Product development- Product development economics-scoring model- financial analysis.

UNIT V PATENTS - Defining Intellectual Property and Patents, Patent Searches and Application, Patent Ownership and Transfer, Patent Infringement, New Developments and International Patent Law.

TEXT BOOKS:

1. Karl T. Ulrich, Steven D. Eppinger, Anita Goyal Product Design and Development, Tata McGraw Hill, Fourth Edition, Reprint 2009.
2. Kenneth B.Kahn, New Product Planning, Sage, 2nd edition, 2011.

REFERENCE BOOKS:

1. A.K. Chitale and R.C. Gupta, Product Design and Manufacturing, PHI, 2008.
2. Deborah E. Bouchoux, Intellectual Property Rights, Delmar, Cengage Learning, 2005.
3. Anil Mital. Anoop Desai, Anand Subramanian, Aashi Mital, Product Development, Elsevier, 2009.
4. Michael Grieves, Product Life Cycle Management, Tata McGraw Hill , 2006.
5. Kerber, Ronald L, Laseter, Timothy M., Strategic Product Creation, Tata-McGraw Hill, 2007.

**OPERATIONS MANAGEMENT
SEMESTER – IV**

PROJECT MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To learn the concepts of managing projects.

COURSE OUTCOME: To apply project management principles in business situations to optimize resource utilization and time optimization.

UNIT I INTRODUCTION TO PROJECT MANAGEMENT - Project Management – Definition –Goal - Lifecycles. Project Selection Methods. Project Portfolio Process – Project Formulation. Project Manager – Roles-Responsibilities and Selection – Project Teams.

UNIT II PLANNING AND BUDGETING - The Planning Process – Work Break down Structure – Role of Multidisciplinary teams. Budget the Project – Methods. Cost Estimating and Improvement. Budget uncertainty and risk management.

- UNIT III SCHEDULING & RESOURCE ALLOCATION** - PERT & CPM Networks - Crashing – Project Uncertainty and Risk Management – Simulation – Gantt Charts – Expediting a project – Resource loading and leveling. Allocating scarce resources – Goldratt's Critical Chain.
- UNIT IV CONTROL AND COMPLETION** - The Plan-Monitor-Control cycle – Data Collecting and reporting – Project Control – Designing the control system. Project Evaluation, Auditing and Termination.
- UNIT V PROJECT ORGANISATION & CONFLICT MANAGEMENT** - Formal Organisation Structure – Organisation Design – Types of project organizations. Conflict – Origin & Consequences. Managing conflict – Team methods for resolving conflict.

TEXT BOOKS:

1. Clifford Gray and Erik Larson, Project Management, Tata McGraw Hill Edition, 2010.
2. John M. Nicholas, Project Management for Business and Technology - Principles and Practice, 4th Edition, Pearson Education, 2012.

REFERENCE BOOKS:

1. Gido and Clements, Successful Project Management, 5th Edition, Thomson Learning, 2011.
2. Harvey Maylor, Project Management, 4th Edition, Pearson Education, 2010.

ROBUST DESIGN

C	M
2	100

COURSE OBJECTIVE: To learn about effective methods of experimental research design

COURSE OUTCOME: Ability to effectively plan the framework for experimentation

UNIT I INTRODUCTION - Introduction to robust design - Robust Design and Experiments -Planning of experiments -Overview of quality by design - Quality loss function -ANOVA rationale -Single Factor Experiments.

UNIT II FACTORIAL EXPERIMENTS - Basic Definition and Principles - Two factor factorial design - tests on means - EMS rule - 2K and 3K factorial designs -Fractional factorial design.

UNIT III SPECIAL EXPERIMENTAL DESIGNS - Randomized blocks - Latin square design - Blocking and confounding - Response Surface Method -

Nested designs.

UNIT IV **ORTHOGONAL EXPERIMENTS** - Comparison of classical and Taguchi's approach - Selection and application of orthogonal arrays for design - Conduct of experiments -collection and analysis of simple experiments - modifying orthogonal arrays - multi-response data analysis.

UNIT V **MAKING THE DESIGN ROBUST** - Variability due to noise factors - classification of quality characteristics and parameters - objective functions - Parameter design - optimization using S/N ratios - attribute data analysis.

TEXT BOOKS:

1. Douglas. C. Montgomery, Design and Analysis of Experiments, John Wiley and Sons, 8th edition, 2012.
2. Phillip J. Rose, Taguchi techniques for quality engineering, Tata McGraw Hill, 2005.

REFERENCE BOOKS:

1. Nicolo Belavendram, Quality by Design: Taguchi techniques for industrial Experimentation, Prentice Hall 1999.
2. Tapan. P. Bagchi, Taguchi methods explained: Practical steps to Robust Design, PHI, 1993.

BUSINESS PROCESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand the model of a business process and to structure an enterprise

COURSE OUTCOME: The student will be able to apply the BPM concepts as a precursor to business process restructuring.

UNIT I **INTRODUCTION** - Definition, need and importance of business process management - Scope and evolution – core elements of business process management – Business process lifecycle – Business process classification – evolution of process architecture – work flow management

UNIT II **PROCESS MODELLING** - Concepts and terminologies –six sigma and business process management - business process model abstraction

– activity models, process models, process – models, instances and interactions, process orchestrations – control flow patterns – Petri Nets - event process chains – workflow nets – workflow languages – Yet Another – graph based – semantic business process management – business process modeling notation

UNIT III PROCESS CHOREOGRAPHY & QUALITY MANAGEMENT - Terminologies – development phases – design – implementation – choreography modeling in BPMN – properties of business process – data dependencies – object life cycle conformance – soundness – structural – relaxed – weak – lazy – soundness criteria – business process quality management

UNIT IV ARCHITECTURES AND METHODOLOGIES - Workflow management – flexible workflow – resource driven workflow – service enabled process management – service oriented architecture – BPM and semantic interoperability – dependencies between processes – methodology – phases

UNIT V BPM AND GOVERNANCE - Business process governance – BPM governance – process of BPM – business process standardization – expertise in BPM – BPM curriculum - dealing human driven process – knowledge engineering in BPM -cultural change in process management

TEXT BOOKS:

1. Mathias Weske, Business Process Management Concepts, Languages and Architecture, Springer, 2nd edition, 2012
2. Brocke and Rosemann, Handbook on Business Process management 1 Introduction, Methods and Information Systems, Springer, 2012

REFERENCE BOOKS:

1. Brocke and Rosemann, Handbook on Business Process management 2 Strategic Alignment, Governance, People and Culture, Springer, 2012
2. Naresh varma, Business process Management Profiting from Process, Global India Publications, 2009

MATERIALS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand how material management should be considered for profitability

COURSE OUTCOME: Student gains knowledge on effective utilization of materials in manufacturing and service organisation

UNIT I **INTRODUCTION** - Operating environment-aggregate planning-role, need, strategies, costs techniques, approaches-master scheduling-manufacturing planning and control system-manufacturing resource planning-enterprise resource planning-making the production plan

UNIT II **MATERIALS PLANNING** - Materials requirements planning-bill of materials-resource requirement planning-manufacturing resource planning-capacity management-scheduling orders-production activity control-codification.

UNIT III **INVENTORY MANAGEMENT** - Policy Decisions-objectives-control - Retail Discounting Model, Newsvendor Model; EOQ and EBQ models for uniform and variable demand With and without shortages -Quantity discount models. Probabilistic inventory models.

UNIT IV **PURCHASING MANAGEMENT** - Establishing specifications-selecting suppliers-price determination-forward buying-mixed buying strategy-price forecasting-buying seasonal commodities-purchasing under uncertainty-demand management-price forecasting-purchasing under uncertainty-purchasing of capital equipment-international purchasing

UNIT V **WAREHOUSE MANAGEMENT** - Stores management-stores systems and procedures-incoming materials control-stores accounting and stock verification-Obsolete, surplus and scrap-value analysis-material handling-transportation and traffic management - operational efficiency-productivity-cost effectiveness-performance measurement

TEXT BOOKS:

1. J.R.Tony Arnold, Stephen N. Chapman, Lloyd M. Clive, Materials Management, Pearson, 2012.
2. P. Gopalakrishnan, Purchasing and Materials Management, Tata McGraw Hill, 2012

REFERENCE BOOKS:

1. Ajay K Garg, Production and Operations Management, Tata McGraw Hill , 2012
2. Ronald H. Ballou and Samir K. Srivastava, Business Logistics and Supply Chain Management, Pearson Education, Fifth Edition, 2013.
3. S. N. Chary, Production and Operations Management, Tata McGraw Hill , 2012

MAINTENANCE MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To understand maintenance strategies, Failure time Distributions, Overhaul and Repair, Recent techniques on maintenance.

COURSE OUTCOME: Maintainability Prediction, Designing Maintenance Polices, Reengineering Maintenance process.

UNIT I MAINTENANCE CONCEPTS - Objectives and functions of Maintenance – Maintenance Strategies – Organisation for Maintenance – Five Zero Concept

UNIT II FAILURE DATA ANALYSIS - MTBF, MTTF, Useful Life – Survival Curves – Failure Time distributions (Poisson, Exponential and Normal) - Repair Time Distribution – Maintainability Prediction – Design for Maintainability – Availability.

UNIT III MAINTENANCE PLANNING AND REPLACEMENT DECISION - Overhaul and repair – meaning and difference – Optimal overhaul – Repair policies for equipment subject to break down – Spare parts management. Optimal interval between preventive replacement of equipment subject to break down, group replacement.

UNIT IV MAINTENANCE POLICIES - Fixed Time Maintenance – Condition based Maintenance. Operate to failure – Opportunity Maintenance – Design out maintenance.

UNIT V RECENT TECHNIQUES - Reliability Centered Maintenance (RCM) – Total Productive Maintenance (TPM) – Philosophy and implementation – Signature Analysis – CMMS – Concept of Terotechnology – Reengineering Maintenance process.

TEXT BOOKS:

1. Mishtra RC and Pathak K, Maintenance Engineering and Management, PHI, 2nd edition, 2012.
2. Sushil Kumar Srivatsava, Industrial Maintenance Management, S Chand and Company, 2005.

REFERENCE BOOKS:

1. Jardine AK, Maintenance, Replacement and Reliability, Pitman Publishing, 2nd edition, 2013.
2. Kelly and Harris MJ, Management of Industrial Maintenance, Butterworth and Company Limited, 1978.

HOSPITALITY AND TOURISM MANAGEMENT

SEMESTER – III

APPLIED OPERATIONS RESEARCH

C	M
4	100

COURSE OBJECTIVE: Students learn about linear programming and extensions of LP models and the optimization algorithms. Helps students learn the replacement model, sequencing problems and processing of 'n' jobs through 'm' machines.

COURSE OUTCOME: Enable students to make decisions under conditions of certainty and uncertainty. Improves the ability to formulate effective models for real world OR problems.

UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP) - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.

UNIT II LINEAR PROGRAMMING EXTENSIONS - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.

UNIT III INTEGER LINEAR PROGRAMMING AND GAME THEORY - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP

solutions.

UNIT IV INVENTORY MODELS, SIMULATION AND DECISION THEORY - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.

UNIT V QUEUING THEORY AND REPLACEMENT MODELS - Queuing Theory - single and Multi-channel models – infinite number of customers and infinite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

TEXT BOOKS:

1. Paneerselvam R., Operations Research, Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, Operations Research, Pearson Education, First Indian Reprint, 2012.
3. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, 9th Edition, Third Indian Reprint 2010.

REFERENCE BOOKS:

1. Sankara Iyer P, Operations Research, Tata Mcgraw Hill, 2008.
2. Frederick & Mark Hillier, Introduction to Management Science – A Modeling and case studies approach with spreadsheets, Tata Mcgraw Hill, 3rd edition, 2007.
3. Gupta P.K, Hira D.S, Problem in Operations Research, S.Chand and Co, 2010.
4. Kalavathy S, Operations Research, 3rd Edition, Vikas Publishing House, 2013.
5. Richard Broson , Govindasamy & Naachimuthu , Operations Research, Schaum's outline series, II Edition, 2000.

INTERNATIONAL BUSINESS MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: Students become familiar with the theoretical background of international business. To understand the economic, cultural and ethical issues relating to international business.

COURSE OUTCOME: Enable students to apply theory in a variety of ways to

varied international business situations, formulate frameworks for complex cross-border decision making

UNIT I INTRODUCTION - International Business –Definition – Internationalizing business-Advantages –factors causing globalization of business- international business environment – country attractiveness –Political, economic and cultural environment – Protection Vs liberalization of global business environment.

UNIT II INTERNATIONAL TRADE AND INVESTMENT - Promotion of global business – the role of GATT/WTO – multilateral trade negotiation and agreements – VIII & IX, round discussions and agreements – Challenges for global business –global trade and investment – theories of international trade and theories of international investment – Need for global competitiveness – Regional trade block – Types – Advantages and disadvantages – RTBs across the globe – brief history.

UNIT III INTERNATIONAL STRATEGIC MANAGEMENT - Strategic compulsions- Standardization Vs Differentiation – Strategic options – Global portfolio management- global entry strategy – different forms of international business – advantages- organizational issues of international business – organizational structures – controlling of international business – approaches to control – performance of global business- performance evaluation system.

UNIT IV PRODUCTION, MARKETING, FINANCIAL AND HUMAN RESOURCE MANAGEMENT OF GLOBAL BUSINESS - Global production –Location –scale of operations- cost of production – Make or Buy decisions – global supply chain issues – Quality considerations- Globalization of markets, marketing strategy – Challenges in product development , pricing, production and channel management- Investment decisions – economic- Political risk – sources of fund- exchange – rate risk and management – strategic orientation – selection of expatriate managers- Training and development – compensation.

UNIT V CONFLICT MANAGEMENT AND ETHICS IN INTERNATIONAL BUSINESS MANAGEMENT - Disadvantages of international business – Conflict in international business- Sources and types of conflict – Conflict resolutions – Negotiation – the role of international agencies –Ethical issues in international business – Ethical decision-making.

TEXT BOOKS:

1. Charles W.I. Hill and Arun Kumar Jain, International Business, 6th edition, Tata Mc Graw Hill, 2009.

2. John D. Daniels and Lee H. Radebaugh, International Business, Pearson Education Asia, New Delhi, 13th edition, 2010.
3. K. Aswathappa, International Business, Tata Mc Graw Hill, 2008.
4. Michael R. Czinkota, Ilkka A. Ronkainen and Michael H. Moffet, International Business, Thomson, Bangalore, 8th edition, 2009.
5. Aravind V. Phatak, Rabi S. Bhagat and Roger J. Kashlak, International Management, Tata Mc Graw Hill, 2nd edition, 2008.
6. Oded Shenkar and Yaong Luo, International Business, John Wiley Inc, Noida, 2nd edition, 2007.

STRATEGIC MANAGEMENT

C	M
4	100

COURSE OBJECTIVE: To understand about Strategic Management, Globalisation, Competitive Advantage, Implementation Strategies, Evaluation and Issues of Non-Profit Organisations.

COURSE OUTCOME: Enhanced strategy formulations, Strategy implementations, evaluation procedures, New Business Models.

UNIT I STRATEGY AND PROCESS - Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.

UNIT II COMPETITIVE ADVANTAGE - External Environment - Porter's Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution- Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage-Case study.

UNIT III STRATEGIES - The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy-Strategy in the Global Environment-Corporate Strategy-Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation- Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) -

Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - McKinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.

UNIT IV STRATEGY IMPLEMENTATION & EVALUATION - The implementation process, Resource allocation, Designing organisational structure- Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.

UNIT V OTHER STRATEGIC ISSUES - Managing Technology and Innovation- Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study

TEXT BOOKS:

1. Thomas L. Wheelen, J.David Hunger and Krish Rangarajan, Strategic Management and Business policy, Pearson Education., 11th edition, 2007
2. Charles W.L.Hill & Gareth R.Jones, Strategic Management Theory, An Integrated approach, Biztantra, Wiley India,6th edition, 2007.
3. Azhar Kazmi, Strategic Management & Business Policy, Tata McGraw Hill, Third Edition, 2008.

REFERENCE BOOKS:

1. Fred.R.David, Strategic Management and cases, PHI Learning, 13th edition, 2010.
2. Upendra Hachru , Strategic Management concepts & cases , Excel Books, 8th edition, 2006.
3. Adriaan H.Aberberg and Alison Rieple, Strategic Management Theory & Application, Oxford University Press, 2008.
4. Arnaldo C.Hax and Nicholas S. Majluf, The Strategy Concept and Process – A Pragmatic Approach, Pearson Education, Second Edition, 2005.
5. Harvard Business Review, Business Policy – part I & II, Harvard Business School.
6. Saloner and Shepard, Podolny, Strategic Management, John Wiley, 2005.
7. Lawrence G. Hrebiniak, Making strategy work, Pearson, 2005.
8. Gupta, Gollakota and Srinivasan, Business Policy and Strategic Management – Concepts and Application, Prentice Hall of India, 2nd edition, 2007.

ENTERPRISE RESOURCE PLANNING

C	M
2	100

COURSE OBJECTIVE: To understand about ERP systems, ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

COURSE OUTCOME: Enhanced Evaluation of ERP systems, Business Analytics, Future trends in ERP systems.

UNIT I INTRODUCTION - Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems

UNIT II ERP SOLUTIONS AND FUNCTIONAL MODULES - Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management.

UNIT III ERP IMPLEMENTATION - Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees.

UNIT IV POST IMPLEMENTATION Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation

UNIT V EMERGING TRENDS ON ERP - Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics etc- Future trends in ERP systems- web enabled, Wireless technologies so on.

TEXT BOOKS:

1. Alexis Leon, ERP demystifi ed, second Edition Tata McGraw-Hill, 2007.

REFERENCE BOOKS:

1. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008
2. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.
3. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009.
4. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, Prentice Hall of India,2nd edition, 2006.

5. Summer, ERP, Pearson Education, 2008.

CULTURE AND ETHOS

C	M
2	100

COURSE OBJECTIVE: To provide the background of Indian culture and to give the students an understanding of managing cultural diversity in the workplace. The course enables students to understand issues related to cross-cultural management and teaches how to recognize, analyze and implement ethical decisions.

COURSE OUTCOME: The students should be able to i) describe Indian culture and its transition, ii) explain how different national cultures can influence the individuals and groups in social and business settings iii) contrast positive effects of cultural diversity in the workplace with the negative effects, and identify important considerations in managing diversity iv) Identify the problems in making ethical decisions and summarize code of ethics.

UNIT I INTRODUCTION TO INDIAN CULTURE - Salient features of Indian cultures – socio, ethnic historical and religious perspectives of Indian culture; Cultural transition.

UNIT II CULTURAL DIMENSIONS AND REFLECTIONS - Key elements of Indian cultural dimensions – Dimensions of national cultures -Distinctiveness of Indian culture in personal life, social life and work life - Cultural traits under major religious background – Reflection in arts, paintings, dance, music – Ceremonies celebrations – Place of worships – Belief, attitude and perception – Museum – Special interest – Tourism-

UNIT III CULTURAL MIX - Cultural dissimilarities across world – across nation; Major issues – challenges to hospitality industry; Influence of global culture – Relationship between national culture and organization structure; International dimensions of organizational culture; Impact on personal and work life – Impact on tourist-

UNIT IV CROSS CULTURAL MANAGEMENT - Frameworks of cross cultural management- Cultural shock and acculturation- Cross- cultural training- Managing multicultural teams- Cultural negotiations- Global leadership and motivational issues-Cultural differences in ethics and decision making

UNIT V VALUE SYSTEMS & ETHOS - Indian ethos for management – value oriented holistic Management Practices – ethical issues in business – Role of Government and corporate in promoting ethical code of conduct – Impact of value in hospitality products design and delivery systems.

TEXT BOOKS:

1. F.r. Allchin, Conservation of Indian Heritage, Cosmo Publications, New Delhi, 2003.
2. David C. Thomas, Cross-Cultural Management- Essential Concepts, Sage Publications, 2nd edition, 2008

REFERENCE BOOKS:

1. S.M.Dewan, Corporate Governance in Public Sector Enterprises, Pearson Longman, 2006.
2. G. Hofstede, Culture and Organizations: Intercultural Cooperation and its Importance for Survival, Harper Collins, London, 2nd edition, 2004.
3. Rajiv Desai , Indian Business Culture - An Insider's Guide , Butterworth and Heinemann, 1999.
4. Ananda Das Gupta , Human Values in Management , Ashgate Publishing Limited, 2004.

ROOM DIVISION MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To study the flow of activities and functions in today's lodging operation. To establish the importance of front office and housekeeping and its role in the hospitality industry.

COURSE OUTCOME: The student understands the best practice in front office and housekeeping operations methodology by the practical application of theoretical knowledge, to a range of front office and housekeeping tasks and situations in a commercial environment.

UNIT I INTRODUCTION - Hotel industry – Classification of Hotels and other types of Lodging – Hotel Tariff plans – Types of guest rooms and annex – Major departments of a hotel – Organization structure – Duties and responsibilities of Front office personnel – Inter-department coordination.

UNIT II FRONT OFFICE OPERATIONS - Sections and Layout– Room tariffs and calculation of rates - reservation – registration – Guest services – Check out and settlement – Front office accounting – Night

auditing – safety and security.

UNIT III FRONT OFFICE MANAGEMENT - Evaluating Hotel performance – Revenue per available room – Market share index – Evaluation of hotels by guests; - Yield management – forecasting – Room availability – Sales techniques – Budgetary control.

UNIT IV HOUSEKEEPING OPERATION - Importance of Housekeeping – Organizational structure – Layout – Coordination with other departments - Duties and responsibilities –Hotel guestrooms – contents and cleaning; – public areas – Housekeeping control desk

UNIT V HOUSEKEEPING MANAGEMENT - Housekeeping expenses – controlling expenses – use of textiles – Linen and uniform room – Laundry – Equipment, agents and process; – Sewing room – ergonomics in housekeeping - pest control and waste disposal – changing trends in hospitality

TEXT BOOKS:

1. Jatashankar R. Tewari. Hotel Front Office Operations and Management. Oxford 2009
2. G.Raghubalan and Smritee Raghubalan. Hotel Housekeeping Operations and Management. Second Edition. Oxford, 2nd edition, 2011

REFERENCE BOOKS:

1. Anutosh Bhakta. Professional Hotel Front Office Management. Tata McGraw Hill 2012
2. Casado, M. Housekeeping Management. John Wiley and Sons, Inc., 2nd edition, 2011.
3. Ahmed Ismail. Front Office Operations and Management. Cengage Learning. 2008

TOURISM AND TRAVEL MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To prepare the learners with knowledge and skills essential know what is tourism, its types and the Nations contribution to the industry

COURSE OUTCOME: The learners will have an idea about the different concepts, trends and strategies used in tourism and travel industry.

UNIT I INTRODUCTION - Tourism - Definitions and Concepts – Components of tourism, Geographic components of tourism - Types of Tourists, Visitor, Traveler, and Excursionist – Differentiation Tourism, recreation

and leisure, their inter-relationships – Tourism organization / Institutions –Role and functions of International agencies in Hospitality industry.

UNIT II TRAVEL MANAGEMENT - Travel Agency and Tour Operation Business - Functions of Travel Agency - Setting up a full-fledged Travel Agency - Sources of Income of a travel agency - Diversification of Business - Travel Insurance, Forex, Cargo & MICE – Documentation - IATA Accreditation -Recognition from Government.

UNIT III TOUR PLANNING - Tour Packaging & Costing - Importance of Tour Packaging – Classifications of Tour Packages - Components of Package Tours - Concept of costing - Types of costs - Components of tour cost - Preparation of cost sheet - Tour pricing - Calculation of tour price - Pricing strategies

UNIT IV TOURISM MANAGEMENT - Tourism infrastructure- Tourism organizations-Travel motivators-Leisure or holiday Tourism-Visiting friends and Relatives (VFR)- Cultural Tourism-Adventure Tourism-Sports Tourism-Religious Tourism-Business Tourism-Medical Tourism-Alternative Forms of tourism-Tourism Products and types.

UNIT V ECO TOURISM - Evolution, Principles, Trends and Functions of Ecotourism-Themes - Eco-tel and Eco resorts - Fundamentals of Ecology- Basic Laws & ideas in Ecology- Function and Management of Ecosystem-Biodiversity and its Conservation-Pollution-Ecological Foot Prints -Mass Tourism Vs Ecotourism -Typology of Eco-tourists - Ecotourism Activities & Impacts –Western and Eastern Views of Ecotourism

TEXT BOOKS:

1. Foster Dennis L., The Business Of Travel Agency Operations and Administration Macmillan/McGraw, Singapore, 1993.
2. Sunetra Roday, Archana Biwal & Vandana Joshi, Tourism Operations and Management, Oxford University Press, 2009.

REFERENCE BOOKS:

1. Sampad Kumar Swain & Jitendra Mohan Mishra, Tourism principles and practices, Oxford University Press, 2008.

HOSPITALITY AND TOURISM MANAGEMENT

SEMESTER – IV

FOOD AND BEVERAGE MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To study the empirical foundations and develop a professional orientation toward the practice of food and beverage management as it applies to business, culinary arts and hospitality.

COURSE OUTCOME: The students will understand the fundamental principles of food preparation, cooking techniques, material handling, heat transfer and professionalism.

UNIT I **KITCHEN MANAGEMENT** - Job description – Hierarchy, Attitude and behavior; - Food premises - Kitchen planning – Basic Preparation and operations – Basic principles of food production - Equipments – Fuels - coordination with other departments.

UNIT II **MENU** - Types of menu – menu planning – Beverage menu - Menu designing – menu mer-chandising – menu balancing – wine and food pairing.

UNIT III **PRE – PRODUCTION** - Purchasing procedure – price and quality performance – Purchase specification – Receiving – storing and issuing – stock taking – methods of storage.

UNIT IV **FOOD AND BEVERAGE PRODUCTION** - Food production methods - Beverage production methods – F & B Service areas - Food and beverage service methods – Specializes services.

UNIT V **CATERING MANAGEMENT** - Types of catering – fast-food and popular catering – hotels and quality restaurants – industrial catering, hospital catering – basic policies – financial marketing and catering – control and performance management

TEXT BOOKS:

1. Bernard Davis, Andrew Lockwood and Sally Stone. Food and Beverage Management. Third Edition. Elsevier. 2012
2. John A. Cousins, David Foskett, Cailein Gillespie. Food and Beverage Management. Prentice Hall. 2011.

REFERENCE BOOKS:

1. Parvinder S.Bali. Food Production Operations. Oxford. 2011
2. Denney G. Rutherford and Michael J. O’Fallon. Hotel and Management Operations. Fourth edition. John Wiley & Sons, Inc. 2010

3. Krishna Arora. Theory of Cooking. Frank Bros. & Co. 2010

EVENT MANAGEMENT

C	M
2	100

COURSE OBJECTIVES: To understand the process of planning, organizing and conducting variety of events successfully.

COURSE OUTCOMES: Acquisition of skills in organizing all types of events individually or in groups.

UNIT I **EVENT CONTEXT** - History and evolution, events industry, impact analysis, participants and spectators, balancing impacts, Handling Unethical Behavior,

UNIT II **EVENT MARKETING** - Event planning , pricing and promotion; volunteer team building; sourcing and managing staff Special events-types , traditional, cultural, Riviera, galas, mega-events, trade shows, exhibitions, conferences and conventions, end-to-end tours, excursions, out-door events, social events, seasonal events, environmental impacts, marketing plan; lead-generation, management and follow up,

UNIT III **EVENT PLANNING & ADMINISTRATION** - Sponsorships, screening, budget and controls, fund-raising, negotiation and contracts; role of Government, Negotiation and contracts; Promotional Items, give - aways, Event planning, space management, use of web technology , Develop In-Office and On-Site Ethics and Business Etiquette Policies.

UNIT IV **EVENT LOGISTICS** - Transportation; booth/space design, internal communications, public relations, networking, media handling, checklists, safety and precautions, Other considerations-entertainment, photo/video coverage, prizes and gifts, risk assessment, safety and security arrangements, Venue and supplier checklist

UNIT V **LOCATION & EVENT DESIGN** - Venue Essentials, Creative events concepts, tabletops, other décor props, understanding clients, fundraising galas, Conferences and Conventions, Incentives and Other Special Events, Event Planning Ethics and Etiquette, Protocol, Site selection, requirements and constraints, new venues, ancillaries and amenities, final touches

TEXT BOOKS:

1. Lynn, Brenda R. Carlos , Event Management, 2004.
2. Judy, Event Planning Ethics and Etiquette: A Principled Approach to the Business of Special Event Management, 2009.
3. Johnny Allen , William O'Toole , Robert Harris , Ian McDonnell, Festival and Special Event Management, 2010.

REFERENCES BOOKS:

1. Joe Success, Judy, Special Events: A New Generation and the Next Frontier, 6th edition, 2010.
2. Julia Rutherford Silvers, Professional Event Coordination, The Wiley Event Management Series, 2012.
3. Allison, The Event Marketing Handbook: Beyond Logistics & Planning, 2012.

FACILITY AND SECURITY MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To prepare students for responsible, educated, effective and efficient management of the physical plant demands; especially in the areas of energy, water and waste as related to impact on the environment and facilities management.

COURSE OUTCOME: The students should be able to i) explain goals and objectives of facilities and maintenance management and describe the theoretical aspects of utility systems, energy conservation, mechanical equipment and building design.

UNIT I INTRODUCTION TO FACILITY MANAGEMENT - Role of facilities – Cost associated with facilities- Design considerations- Impact of facility design on facility management- Planning considerations- Planning of office area, food & beverage service outlet areas and service support areas-Management's responsibilities towards facility management- Responsibilities of facility manager and facility department.

UNIT II MAINTENANCE MANAGEMENT SYSTEM - Goals – Organization in star rated hotels- Types of maintenance and repair- Contract maintenance services- Computerized and internet based services- Budgeting for POM and utilities- Capital expenditure management.

UNIT III HEATING, ELECTRICAL, LIGHTING AND LAUNDRY SYSTEMS - Heating system: Heating sources and equipment- Cooling sources and equipment- HVAC system: types, maintenance and control.

Electrical system: components- billing methods of electric utilities- telecommunications system. Lighting system: light sources- lighting system design and maintenance- energy conservation opportunities. Laundry system: equipment- design factors- maintenance- emerging trends.

UNIT IV ENVIRONMENT AND SUSTAINABILITY MANAGEMENT - Motivations for environmental concern- Pollution and control: air, water and noise- Water and sanitation- Land use planning and management- Involving staff, customers, communities and partnerships

UNIT V SAFETY AND SECURITY SYSTEMS - Building design, maintenance and safety- Safety in the guest bath- Fire safety: prevention, detection, notification, suppression and control- Evacuation plans- Security: key controls, electronic locks - Terrorism, anti-social and extraordinary events.

TEXT BOOKS:

1. David M. Stipanuk, Hospitality Facilities Management and Design, The American Hotel & Lodging Educational Institute, 3rd Edition, 2012.
2. Darrell Clifton, Hospitality security- Managing security in today's hotel, lodging, entertainment and tourism environment, CRC Press, Taylor & Francis group, 2012.

REFERENCE BOOKS:

1. Sujit Ghosal, Hotel Engineering, Oxford University Press, NewDelhi, 2011.
2. John Edwards, Applied facilities management for the hospitality industry, Cognella Academic Publishing, 2011.
3. Frank D. Borsenik and Alan T. Stuss, The management of maintenance and engineering system in the hospitality industry, John Wiley & Sons, Inc., New York, 1997.
4. Philip Sloan, Willy Legrand and Joseph S. Chen, Sustainability in the hospitality industry, Butterworth- Heineman, 2013.

FOOD SAFETY AND QUALITY

C	M
2	100

COURSE OBJECTIVE: To study the importance of personal cleanliness; sanitary practices in food preparation; causes, investigation, control of illness caused by food contamination (Hazard Analysis Critical Control Points); and work place safety standards

COURSE OUTCOME: Ability to assess the quality of food and to provide safe and quality food

UNIT I FOOD SAFETY - Introduction - Food Hazards – Risks – Contaminants - Food Hygiene - Food preservation, Physical agents, Chemical agents, Use of low temperature in food preservation, Preservation by drying, Preservation of meat, fish & egg using different methods.

UNIT II FOOD MICROBIOLOGY - General characteristics of micro-organisms - common food borne microorganisms- Bacteria, Fungi, Viruses, Parasites; - micro-organisms that bring about useful changes in food, fermentation, vinegar, anti-biotic; - Food poisoning - Food infections - Food borne diseases - preventive measures.

UNIT III FOOD QUALITY - Food standards - need for food laws; - Food adulteration & Additives - Detection of food adulterants, Prevention of food adulteration act standards; - Fruit product order standards - Agmark standards - Indian standards institution - International – Codex Alimentarius, ISO, Regulatory agencies; - HACCP.

UNIT IV HYGIENE AND SANITATION - General principles of food hygiene - general hygiene practices for commodities, equipment, work area and personnel; - Hygiene storage – Food spoilage – Food contamination due to pests, cross contamination; - cleaning and disinfection - safety aspects of processing water, waste water & waste disposal.

UNIT V RECENT TRENDS - Emerging pathogens - Genetically modified foods - Food labelling - Newer trends in food packaging and technology - BSE (Bovine Serum Encephalopathy)

TEXT BOOKS:

1. Jacob M. Safe Food Handling: A Training Guide for Managers of Food Service Establishments, Geneva: World Health Organization, 1996.
2. James M. Jay, Martin J. Loessner, David A. Golden, Modern Food Microbiology. Seventh edition. Springer, 2006.

REFERENCE BOOKS:

1. Rangana S. Handbook of analysis and Quality Control for fruits and vegetables. Tata Mc Graw Hill, 1986.
2. World Health Organization, Food borne Disease: A Focus for Health Education. Stylus Pub Llc, 2000.

DESTINATION MANAGEMENT

C	M
2	100

COURSE OBJECTIVE: To prepare the learners with knowledge and skills essential to study and plan according to the different destination to suit their need

COURSE OUTCOME: The learners shall be competent for analyzing how the destinations are segmented and handle a destination on their own.

UNIT I INTRODUCTION - Meaning-Factors influencing DM- Destination stakeholders - Segmentation of destinations -Destinations and products-Destination Selection Process - Destination Management Systems – The Values of Tourism

UNIT II DESTINATION INTEGRATED SERVICES AND COMMUNICATION - Destination Management Functions -Destination planning guidelines- Destination potential assessment-DM strategies-DM organizations-DM Innovations- Destination Marketing Mix- Destination branding perspectives and challenges.

UNIT III SUSTAINABLE TOURISM - Sustainable Tourism Development: Meaning- Principles-Sustainable Tourism Planning- Approaches to Sustainable Tourism- Alternative tourism-collaboration and partnership- Responsible tourism-Waste Management - Eco-friendly Practices

UNIT IV RECREATION MANAGEMENT - Recreation: an overview-Recreation Theories - Recreation and leisure services-Recreational Resources - the Demand and Supply for Recreation and Tourism -Recreational demand - Recreational and Tourist Motivation - Barriers to Recreation-Environmental perspectives

UNIT V EMERGING TRENDS IN DESTINATION MANAGEMENT - Institutional Support: Public Private Partnership (PPP) - National Planning Policies for Destination Development- WTO Guidelines for Planners - Role of urban civic bodies: Town planning -Characteristics of rural tourism planning- Environmental Management Systems – Destination Mapping (practical assignment).

TEXT BOOKS:

1. Nigel Morgan, Annette Pritchard & Roger Pride, Destination branding: Creating the Unique Proposition, Butterworth and Heinemann, 2004.
2. C.Gunn, Tourism Planning: Basic, Concepts and Cases, Cognizant Publication, 2002.

REFERENCE BOOKS:

1. George Torkildsen, Leisure and Recreation Management, Fourth Edition, E & FN Spon, London, 2005.
2. Middleton, V.T.C and Hawkins, R, Sustainable Tourism: A Marketing Perspective, Butterworth – Heinemann, Oxford, 1998.
3. Shalini Singh, Dallen J.Timothy & Ross Kingston Dowling, Tourism in Destination Communities, CABI Publishing, 2003.