



**HINDUSTAN
UNIVERSITY**

HINDUSTAN INSTITUTE OF TECHNOLOGY & SCIENCE

(Estd. u/s 3 of the UGC Act, 1956)

Padur, Kancheepuram District - 603 103.

DEPARTMENT OF COMPUTER APPLICATIONS

**REGULATIONS, CURRICULUM
AND SYLLABUS
2013**

**M.C.A.
(Master of Computer Applications)**

ACADEMIC REGULATIONS
(M.TECH./ M.B.A. / M.C.A.) (Full - Time / Part - Time)
(Effective 2013-14)

1. Vision, Mission and Objectives

1.1 The Vision of the Institute is "To make every man a success and no man a failure".

In order to progress towards the vision, the Institute has identified itself with a mission to provide every individual with a conducive environment suitable to achieve his / her career goals, with a strong emphasis on personality development, and to offer quality education in all spheres of engineering, technology, applied sciences and management, without compromising on the quality and code of ethics.

1.2 Further, the institute always strives

- To train our students with the latest and the best in the rapidly changing fields of Engineering, Technology, Management, Science & Humanities.
- To develop the students with a global outlook possessing, state of the art skills, capable of taking up challenging responsibilities in the respective fields.
- To mould our students as citizens with moral, ethical and social values so as to fulfill their obligations to the nation and the society.
- To promote research in the field of science, Humanities, Engineering, Technology and allied branches.

1.3 Our aims and objectives are focused on

- Providing world class education in engineering, technology, applied science and management.

- Keeping pace with the ever changing technological scenario to help our students to gain proper direction to emerge as competent professionals fully aware of their commitment to the society and nation.
- To inculcate a flair for research, development and entrepreneurship.

2. Admission

2.1 The admission policy and procedure shall be decided from time to time by the Board of Management (BOM) of the Institute, following guidelines issued by Ministry of Human Resource Development (MHRD), Government of India. The number of seats in each branch of the (M.TECH / M.B.A. / M.C.A.) programme will be decided by BOM as per the directives from Ministry of Human Resource Development (MHRD), Government of India and taking into account the market demands. Some seats for Non Resident Indians and a few seats for foreign nationals shall be made available.

2.2 The selected candidates will be admitted to the (M.TECH / M.B.A. / M.C.A.) programme after he/she fulfills all the admission requirements set by the Institute and after payment of the prescribed fees.

2.3 Candidates for admission to the first semester of the Master's Degree Programme shall be required to have passed an appropriate Degree Examination recognized by Hindustan University.

2.4 In all matters relating to admission to the (M.TECH / M.B.A. / M.C.A.). Programme, the decision of the Institute and its interpretation given by the Chancellor of the Institute shall be final.

2.5 If at any time after admission, it is found that a candidate has not fulfilled any of the requirements stipulated by the Institute, the Institute may revoke the admission of the candidate with information to the Academic Council.

3. Structure of the programme

3.1 The programme of instruction will have the following structure

- i) Core courses of Engineering / Technology / Management.
- ii) Elective courses for specialization in areas of student's choice

3.2 The minimum durations of the programmes are as given below:

Program	No. of Semesters
M.Tech.(Full-Time)	4
M.Tech.(Part -Time)	6
M.B.A. (Full - Time)	4
M.B.A. (Part - Time)	6
M.C.A.(Full - Time)	6
M.C.A.(Part-Time)	8

Every (M.TECH / M.B.A. / M.C.A.) programme will have a curriculum and syllabi for the courses approved by the Academic Council.

3.3 Each course is normally assigned certain number of credits. The following norms will generally be followed in assigning credits for courses.

- One credit for each lecture hour per week per semester
- One credit for each tutorial hour per week per semester

- One credit for each laboratory practical of three hours per week per semester.
- One credit for 4 weeks of industrial training and
- One credit for 2 hours of project per week per semester.

3.4 For the award of degree, a student has to earn certain minimum total number of credits specified in the curriculum of the relevant branch of study. The curriculum of the different programs shall be so designed that the minimum prescribed credits required for the award of the degree shall be within the limits specified below.

Program	Minimum prescribed credit range
M.Tech. (Full time / Part time)	75 - 85
M.B.A. (Full time / Part time)	85 - 95
M.C.A (Full time / Part time)	115 - 125

3.5 The medium of instruction, examination and the language of the project reports will be English.

4. Faculty Advisor

4.1 To help the students in planning their courses of study and for getting general advice on the academic programme, the concerned Department will assign a certain number of students to a Faculty member who will be called their Faculty Advisor.

5. Class Committee

5.1 A Class Committee consisting of the following will be constituted by the Head of the Department for each class:

- (i) A Chairman, who is not teaching the class.

- (ii) All subject teachers of the class.
- (iii) Two students nominated by the department in consultation with the class.

The Class Committee will meet as often as necessary, but not less than three times during a semester.

The functions of the Class Committee will include:

- (i) Addressing problems experienced by students in the classroom and the laboratories.
- (ii) Analyzing the performance of the students of the class after each test and finding ways and means of addressing problems, if any.
- (iii) During the meetings, the student members shall express the opinions and suggestions of the class students to improve the teaching / learning process.

6. Grading

6.1 A grading system as below will be adhered to.

Range of Marks	Letter Grade	Grade points
95-100	S	10
85 - 94	A	09
75- 84	B	08
65-74	C	07
55-64	D	06
50-54	E	05
< 50	U	00
	I (Incomplete)	–

6.2 GPA & CGPA

GPA is the ratio of the sum of the product of the number of credits C_i of course "i" and the grade points P_i earned for that course taken over all courses "i" registered by the student to the sum of C_i for all "i". That is,

$$GPA = \frac{\sum_i C_i P_i}{\sum_i C_i}$$

CGPA will be calculated in a similar manner, at any semester, considering all the courses enrolled from first semester onwards.

6.3 For the students with letter grade I in certain subjects, the same will not be included in the computation of GPA and CGPA until after those grades are converted to the regular grades.

6.4 Raw marks will be moderated by a moderation board appointed by the Vice-Chancellor of the University. The final marks will be graded using an absolute grading system. The Constitution and composition of the moderation board will be dealt with separately.

7. Registration and Enrollment

7.1 Except for the first semester, registration and enrollment will be done in the beginning of the semester as per the schedule announced by the University.

7.2 A student will be eligible for enrollment only if he/she satisfies regulation 10 (maximum duration of the programme) and will be permitted to enroll if (i) he/she has cleared all dues in the Institute, Hostel & Library up to the end of the

previous semester and (ii) he/she is not debarred from enrollment by a disciplinary action of the University.

7.3 Students are required to submit registration form duly filled in.

8. Registration requirement

8.1 (i) A Full time student shall not register for less than 16 credits or more than 26 credits in any given semester.

8.1 (ii) A part time student shall not register for less than 10 credits or more than 20 credits in any given semester.

8.2 If a student finds his/her load heavy in any semester, or for any other valid reason, he/she may withdraw from the courses within three weeks of the commencement of the semester with the written approval of his/her Faculty Advisor and HOD. However the student should ensure that the total number of credits registered for in any semester should enable him/her to earn the minimum number of credits per semester for the completed semesters.

9. Minimum requirement to continue the programme

9.1 For those students who have not earned the minimum required credit prescribed for that particular semester examination, a warning letter to the concerned student and also to his parents regarding the shortage of his credit will be sent by the HOD after the announcement of the results of the university examinations.

10. Maximum duration of the programme

The minimum and maximum period for the completion of various programs are given below.

Program	Min. No. of Semesters	Max. No. of Semesters
M.Tech (Full - time)	4	8
M.Tech (Part - time)	6	10
M.B.A. (Full Time)	4	8
M.B.A. (Part Time)	6	10
M.C.A. (Full - Time)	6	12
M.C.A (Part -Time)	8	14

11. Temporary discontinuation

11.1 A student may be permitted by the Director(academic) to discontinue temporarily from the programme for a semester or a longer period for reasons of ill health or other valid reasons. Normally a student will be permitted to discontinue from the programme only for a maximum duration of two semesters.

12. Discipline

12.1 Every student is required to observe discipline and decorum both inside and outside the campus and not to indulge in any activity which will tend to bring down the prestige of the University.

12.2 Any act of indiscipline of a student reported to the Director (Academic) will be referred to a Discipline Committee so constituted. The Committee will enquire into the charges and decide on suitable punishment if the charges are substantiated. The committee will also authorize the Director(Academic) to recommend to the Vice-Chancellor the implementation of the decision. The student concerned may appeal to the Vice-Chancellor whose decision will be final. The Director (Academic) will report the action taken at the next meeting of the Council.

12.3 Ragging and harassment of women are strictly prohibited in the University campus and hostels.

13. Attendance

13.1 A student whose attendance is less than 75% is not eligible to appear for the end semester examination for that semester. The details of all students who have attendance less than 75% will be announced by the teacher in the class. These details will be sent to the concerned HODs and Director (Academic).

13.2 Those who have less than 75% attendance will be considered for condonation of shortage of attendance. However a condonation of 10% in attendance will be given on medical reasons. Application for condonation recommended by the Faculty Advisor, concerned faculty member and the HOD is to be submitted to the Director (Academic) who, depending on the merits of the case, may permit the student to appear for the end semester examination. A student will be eligible for this concession at most in two semesters during the entire degree programme. Application for medical leave, supported by medical certificate with endorsement by a Registered Medical Officer, should reach the HOD within seven days after returning from leave or, on or before the last instructional day of the semester, whichever is earlier.

13.3 As an incentive to those students who are involved in extra curricular activities such as representing the University in Sports and Games, Cultural Festivals, and Technical Festivals, NCC/ NSS events, a relaxation of up to 10% attendance will be given subject to the

condition that these students take prior approval from the officer-in-charge. All such applications should be recommended by the concerned HOD and forwarded to Director (Academic) within seven instructional days after the programme/activity.

14. Assessment Procedure

14.1 The Academic Council will decide from time to time the system of tests and examinations in each subject in each semester.

14.2 For each theory course, the assessment will be done on a continuous basis as follows:

Test / Exam	Weightage	Duration of Test Exam
First Periodical Test*	10%	2 Periods
Second Periodical Test*	10%	2 Periods
Model exam	20%	3 hours
Seminar/ Assignments/Quiz	20%	
End - semester examination	50%	3 Hours

* Best out of the two tests will be considered.

14.3 For practical courses, the assessment will be done by the subject teachers as below:

- (i) Weekly assignment/Observation note book / lab records - weightage 60%.
- (ii) End semester examination of 3 hours duration including viva - weightage 40%

15. Make up Examination/model examination

15.1 Students who miss the end-semester examinations / model examination for valid reasons are eligible for make-up examination /model examination. Those

who miss the end-semester examination / model examination should apply to the Head of the Department concerned within five days after he / she missed examination, giving reasons for absence.

- 15.2** Permission to appear for make-up examination / model exam will be given under exceptional circumstances such as admission to a hospital due to illness. Students should produce a medical certificate issued by a Registered Medical Practitioner certifying that he/she was admitted to hospital during the period of examination / model exam and the same should be duly endorsed by parent / guardian and also by a medical officer of the University within 5 days.

16. Project evaluation

- 16.1** For Project work, the assessment will be done on a continuous basis as follows:

Review / Examination	Weightage
First Review	10%
Second Review	20%
Third Review	20%
End semester Examination	50%

For end semester exam, the student will submit a Project Report in a format specified by the Director (Academic). The first three reviews will be conducted by a Committee constituted by the Head of the Department. The end - semester examination will be conducted by a Committee constituted by the Controller of Examinations. This will include an external expert.

17. Declaration of results

- 17.1** A candidate who secures not less than 50% of total marks prescribed for a course with a minimum of 50% of the marks prescribed for the end semester examination shall be declared to have passed the course and earned the specified credits for the course.

- 17.2** After the valuation of the answer scripts, the tabulated results are to be scrutinized by the Result Passing Boards of PG programmes constituted by the Vice-Chancellor. The recommendations of the Result Passing Boards will be placed before the Standing Sub Committee of the Academic Council constituted by the Chancellor for scrutiny. The minutes of the Standing Sub Committee along with the results are to be placed before the Vice-Chancellor for approval. After getting the approval of the Vice-Chancellor, the results will be published by the Controller of Examination/ Registrar.

- 17.3** If a candidate fails to secure a pass in a course due to not satisfying the minimum requirement in the end semester examination, he/she shall register and re-appear for the end semester examination during the following semester. However, the sessional marks secured by the candidate will be retained for all such attempts.

- 17.4** If a candidate fails to secure a pass in a course due to insufficient sessional marks though meeting the minimum requirements of the end semester examination, wishes to improve on his/ her sessional marks, he/she will have to register for the particular course and

attend the course with permission of the HOD concerned and the Registrar. The sessional and external marks obtained by the candidate in this case will replace the earlier result.

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

17.6 The weightage for internal marks in finalizing results and grades shall be waived off after completion of 5 semesters.

18. Grade Card

18.1 After results are declared, grade sheet will be issued to each student, which will contain the following details:

- (i) Program and branch for which the student has enrolled.
- (ii) Semester of registration.
- (iii) List of courses registered during the semester and the grade scored.
- (iv) Semester Grade Point Average (GPA)
- (v) Cumulative Grade Point Average (CGPA).

19. Class / Division

19.1 Classification is based on CGPA and is as follows:

CGPA \geq 8.0 : **First Class with distinction**

6.5 \leq CGPA < 8.0 : **First Class**

5.0 \leq CGPA < 6.5 : **Second Class.**

19.2 (i) Further, the award of 'First class with distinction' is subject to the candidate becoming eligible for the award of the degree having passed the examination in all the courses in his/her first appearance within the minimum duration of the programme.

(ii) The award of 'First Class' is further subject to the candidate becoming eligible to the award of the degree having passed the examination in all the courses within the below mentioned duration of the programme.

Program	No. of Semesters
M.Tech.(Full-Time)	5
M.Tech.(Part -Time)	7
M.B.A. (Full - Time)	5
M.B.A. (Part - Time)	7
M.C.A.(Full - Time)	7
M.C.A.(Part -Time)	9

(iii) The period of authorized discontinuation of the programme (vide clause 11.1) will not be counted for the purpose of the above classification.

20. Transfer of credits

20.1 Within the broad framework of these regulations, the Academic Council, based on the recommendation of the transfer of credits committee so constituted by the Chancellor may permit students to earn part of the credit requirement in other approved institutions of repute and status in the country or abroad.

21. Eligibility for the award of (M.TECH / M.B.A. / M.C.A.) Degree

21.1 A student will be declared to be eligible for the award of the (M.TECH / M.B.A. / M.C.A.). Degree if he/she has

- i) registered and successfully credited all the core courses,
- ii) successfully acquired the credits in the different categories as specified in the curriculum corresponding to the discipline (branch) of his/her study within the stipulated time,
- iii) has no dues to all sections of the Institute including Hostels, and

iv) has no disciplinary action pending against him/her.

The award of the degree must be recommended by the Academic Council and approved by the Board of Management of the University.

22. Power to modify

22.1 Notwithstanding all that has been stated above, the Academic Council has the right to modify any of the above regulations from time to time subject to approval by the Board of Management.

HINDUSTAN UNIVERSITY
MASTER OF COMPUTER APPLICATIONS
CURRICULUM - 2013

SEMESTER - I

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
Theory							
1.	PMA 108	Discrete Mathematics & Finite State Automata	3	1	0	4	4
2.	PBA 160	Accounting and Financial Management	3	1	0	4	4
3.	PCA 101	Computer Organization	3	1	0	4	4
4.	PCA 102	Problem Solving and Programming	3	1	0	4	4
5.	PCA 103	Introduction to Information Technology	3	1	0	4	4
PRACTICAL							
6.	PCA 104	Programming Lab	0	0	3	1	3
7.	PCA 105	Accounting and Financial Management Lab	0	0	3	1	3
		TOTAL				22	26

SEMESTER II

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	PCA201	Operating Systems	3	0	2	4	5
2	PCA202	Object Oriented Programming	3	1	0	4	4
3	PCA203	Database Management Systems	3	0	0	3	3
4	PCA204	Data Structures	3	1	0	4	4
5	PCA205	Design and Analysis of Algorithms	3	1	0	4	4
PRACTICAL							
6	PCA206	Object Oriented Programming Lab	0	0	3	1	3
7	PCA207	Database Management Systems Lab	0	0	3	1	3
8	PCA208	Data Structures Lab	0	0	3	1	3
		TOTAL				22	29

SEMESTER III

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	PCA301	Computer Networks	3	0	0	3	3
2	PCA302	Microprocessors and its Applications	3	1	0	4	4
3	PCA303	Java Programming	3	1	0	4	4
4	PCA304	Computer Graphics and Multimedia Systems	3	0	0	3	3
5	*****	Elective-I	3	0	0	3	3
PRACTICAL							
6	PCA305	Microprocessors Lab	0	0	3	1	3
7	PCA306	Java Programming Lab	0	0	3	1	3
8	PCA307	Computer Graphics and Multimedia Lab	0	0	3	1	3
		TOTAL				20	26

SEMESTER - IV

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	PCA401	Advanced Java Programming	3	1	0	4	4
2	PCA402	Object Oriented Analysis and Design	3	0	2	4	5
3	PCA403	Visual Programming	3	1	0	4	4
4	PCA404	Software Engineering	3	0	0	3	3
5	*****	Elective-II	3	0	0	3	3
PRACTICAL							
6	PCA405	Advanced Java Programming Lab	0	0	3	1	3
7	PCA406	Visual Programming Lab	0	0	3	1	3
8	EL2431	Communication Skills and Personality Development	2	0	2	3	4
		TOTAL				23	29

SEMESTER - V

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
THEORY							
1	PCA501	Service oriented Architecture	3	0	0	3	3
2	*****	Elective-III	3	0	0	3	3
3	*****	Elective- IV	3	0	0	3	3
4	*****	Elective- V	3	0	0	3	3
5	*****	Elective-VI	3	0	0	3	3
PRACTICAL							
6	PCA502	XML and Web Services Lab	0	0	3	1	3
7	PCA503	Software Development Lab	0	0	3	1	3
8	PCA504	Project Work - Phase - I	0	0	3	1	3
		TOTAL				18	24

SEMESTER - VI

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
1	PCA601	Project Work - Phase -II	0	0	24	12	24
		TOTAL				12	24

ELECTIVE COURSES

Sl. No.	Course Code	Course Title	L	T	P	C	TCH
1	PCA701	TCP/IP Protocol Suite	3	0	0	3	3
2	PCA702	Management Information Systems	3	0	0	3	3
3	PCA703	Distributed Computing	3	0	0	3	3
4	PCA704	Mobile Computing	3	0	0	3	3
5	PMA112	Numerical and Statistical Methods	3	0	0	3	3
6	PCA705	Advanced Databases	3	0	0	3	3
7	PMA113	Resource Management Techniques	3	0	0	3	3
8	PCA706	Web Graphics	3	0	0	3	3
9	PCA707	Natural Language Processing	3	0	0	3	3
10	PCA708	Digital Imaging	3	0	0	3	3
11	PCA709	Electronic Commerce	3	0	0	3	3
12	PCA710	Software Quality Management	3	0	0	3	3
13	PCA711	Software Project Management	3	0	0	3	3
14	PAT705	Supply Chain Management	3	0	0	3	3
15	PCA712	Agent Based Intelligent System	3	0	0	3	3
16	PCA713	Software Agents	3	0	0	3	3
17	PCA714	Unix Internals	3	0	0	3	3
18	PCA715	Enterprise Resource Planning	3	0	0	3	3
19	PBA302	Entrepreneurship Development	3	0	0	3	3
20	PCA716	System Analysis and design	3	0	0	3	3
21	PCA717	Data warehousing and data mining	3	0	0	3	3
22	PCA718	XML and web services	3	0	0	3	3
23	PCA719	Client server technology	3	0	0	3	3
24	PCA720	Cyber security	3	0	0	3	3
25	PCA721	Perl and Python Programming	3	0	0	3	3
26	PCA722	Unix and Shell Programming	3	0	0	3	3
27	PCA723	Health care information systems	3	0	0	3	3
28	PCA724	Cloud computing	3	0	0	3	3
29	PCA725	Artificial Intelligence system	3	0	0	3	3
30	PCA726	Mobile Application Development	3	0	0	3	3
31	PCA727	PHP and MYSQL	3	0	0	3	3

Total No of Credits: 117

HINDUSTAN UNIVERSITY
MASTER OF COMPUTER APPLICATIONS
CURRICULUM - 2013
SEMESTER - I

PMA108 DISCRETE MATHEMATICS & FINITE STATE AUTOMATA

L T P C
3 1 0 4

Goal

To know about mathematical logic grammars and languages and basic set theory concepts.

Objectives

The course should enable the students

- To learn about the matrix algebra
- To learn about set theory.
- To learn about various logical operators
- To study about grammars and formal languages
- To learn about automata theories

Outcomes

The student should be able to

- Know about the matrix algebra.
- Know about working with sets
- Know about various type of logical operators
- Know about grammars and formal languages.
- Know about various automata theories

UNIT I MATRIX ALGEBRA **12**

Matrices - Rank of Matrix - Solving System of Equations - Consistent and Inconsistent systems - Eigen Values and Eigen Vectors - Inverse of a Matrix - Cayley Hamilton Theorem.

UNIT II BASIC SET THEORY **12**

Basic Definitions - Venn Diagrams and set operations - Laws of set theory - Principle of inclusion and exclusion - partitions- Permutation and Combination - Relations- Properties of relations - Matrices of relations - Closure operations on relations - Functions - injective, surjective and bijective functions.

UNIT III MATHEMATICAL LOGIC **12**

Propositions and logical operators - Truth table - Propositions generated by a set, Equivalence and implication - Basic laws- Some more connectives - Functionally complete set of connectives- Normal forms - Proofs in Propositional calculus - Predicate calculus.

UNIT IV FORMAL LANGUAGES AND FINITE STATE AUTOMATA**12**

Languages and Grammars - Phrase Structure Grammar - Classification of Grammars -Pumping Lemma for Regular Languages (Statement only)-Context Free Languages. Finite State Automata- Deterministic Finite State Automata (DFA) - Non Deterministic Finite State Automata (NFA)-Equivalence of DFA and NFA.

UNIT V PROBABILITY AND RANDOM VARIABLE**12**

Probability - addition and multiplication theorem - Baye's theorem - Random variables - Moments - Moment generating function - Standard distributions - Binomial, Poisson and Normal (Simple problems with no derivation).

Total No. of Periods: 60**TEXT BOOKS:**

- 1) T.Veerarajan, "Discrete Mathematics for Computer Science", Tata McGraw Hill, 2007.
- 2) Dr.A.Singaravelu, Dr.S.Siva Subramanian and Dr.C.Ramachandran, "Probability and Queuing Theory", Meenakshi agency,(Unit I and II), 4th edition, December 2006.

REFERENCES:

- 1) M.K.Venkataraman,N.Sridharan and N.Chandrasekaran "Discrete Mathematics", National Publishing Company, 2003.
- 2) A.Tamilarasi & A.M.Natarajan, "Discrete Mathematics and its Application", Khanna Publishers, 2nd Edition 2005.
- 3) Kenneth H.Rosen, "Discrete Mathematics and Its Applications", Tata McGraw Hill, 5th Edition, (Unit 1, 2 & 3), 2003.
- 4) M.K.Venkataraman "Engineering Mathematics", Volume II, National Publishing Company, 1986.

PBA160 ACCOUNTING AND FINANCIAL MANAGEMENT**L T P C**
3 1 0 4**Goal**

To learn about financial accounting along with the preparation of final accounts.

Objectives

The course should enable the students:

- To learn about principles of Accounting for various domains and prepare a final account.
- To learn about Various types of accounts and to generate a balance sheet
- To learn about various types of Budgets
- To study about capital Management
- To learn about dividend policy

Outcome

The student should be able to

- Know about the various principles of Accounting and prepare a final account
- Generate a balance sheet
- Know about working with budgets
- Have knowledge about capital management
- Understand the concepts of dividend policy

UNIT I FINANCIAL ACCOUNTING 9

Meaning and Scope of Accounting-Principles-Concepts-Conventions-Accounting Standards-Final Accounts-Trail Balance-Trading Account-Profit and Loss Account-Balance Sheet-Accounting Ratio Analysis-Funds Flow Analysis-Cash Flow Analysis.

UNIT II ACCOUNTING 9

Meaning-Objectives-Elements of Cost-Cost Sheet-Marginal Costing and Cost Volume Profit Analysis-Break Even Analysis-Applications-Limitations-Standard Costing and Variance Analysis-Material-Labor-Overhead-Sales-Profit Variances.

UNIT III BUDGETS AND BUDGETING CONTROL 9

Budgets and Budgetary Control-Meaning-Types-Sales Budget-Production Budget-Cost of Production Budget-Flexible Budgeting-Cash Budget-Master Budget-Zero Base Budgeting-Computerized Accounting.

UNIT IV INVESTMENT DECISION AND COST OF CAPITAL 9

Objectives and Functions of Financial Management-Risk-Return Relationship-Time Value of Money Concepts-Capital Budgeting-Methods of Appraisal-Cost of Capital Factors Affecting Cost of Capital-Computation for Each Source of Finance and Weighted Average Cost of Capital.

UNIT V FINANCING DECISION AND WORKING CAPITAL MANAGEMENT 9

Capital Structure-Factors Affecting Capital Structure-Dividend Policy-Types of Dividend Policy-Concepts of Working Capital-Working Capital Policies-Factors affecting Working Capital-Estimation of Working Capital Requirements.

Total No. of Periods: 45

TEXT BOOKS:

1. S.N.Maheswari, "Financial and Management Accounting", Sultan Chand & Sons, 2003.
2. I.M.Pandey, "Financial Management", 9th Edition, Vikas Publications, 2005.

REFERENCES:

1. S.P.Iyengar, "Cost and Management Accounting", Sultan Chand & Co., 2002.
2. I.M.Pandey, "Elements of Management Accounting", Vikas Publishing House, 2003

PCA101 COMPUTER ORGANIZATION

L T P C
3 1 0 4

Goal

To study various data representation using diverse computer arithmetic, register and I/O organization.

Objectives

The course should enable the students:

- To learn the various data types, it's representation, different logic gates and digital circuits
- To learn about various digital components like Decoders, Multiplexers and their associated register transfer micro operations.
- To learn the diverse instruction codes existing in different computer registers and the machine language representation with assembler as an example.
- To learn about various peripheral devices, I/O interface, asynchronous and serial communication interface.
- To focus on effective memory organization and CPU advanced algorithms.

Outcome

The student should be able to:

- Apply and represent the various data types in different logic gate design employing 1'S and 2's complement nature.
- Understand the design of different digital components, its applications, merits and the implementational challenges.
- Understand the application of different instruction codes in various computer register and appreciate its merits.
- Implement and interpret the peripheral devices direct access to primary memory.
- Understand memory organization and the advanced algorithm for CPU.

UNIT I INTRODUCTION TO DIGITAL DESIGN 9

Data Representation - Data Types - Complements - Arithmetic Operations - Representations - Fixed-Point, Floating-Point , Decimal Fixed-Point - Binary Codes- Logic Gates, Boolean Algebra, Map Simplification - Combinational Circuits: Half-Adder, Full Adder- Flip Flops - Sequential Circuits

UNIT II DIGITAL COMPONENTS - REGISTER TRANSFER & MICRO OPERATIONS 9

ICs - Decoders - Multiplexers - Registers - Shift Registers - Binary Counters - Memory Unit - Register Transfer Language - Register Transfer - Bus And Memory Transfers - Arithmetic , Logic And Shift Micro Operations , Arithmetic Logic Shift Unit.

UNIT III COMPUTER ORGANIZATION AND PROGRAMMING 9

Instruction Codes - Computer Registers - Computer Instructions - Timing And Control - Instruction

Cycle - Memory Reference Instructions - I/O And Interrupt - Machine Language - Assembly Language - Assembler - Program Loops - Programming Arithmetic And Logic Operations - Subroutines - I/O Programming.

UNIT IV INPUT - OUTPUT ORGANIZATION 9

Peripheral Devices - Input-Output Interface - Asynchronous Data Transfer - Modes of Transfer - Priority Interrupt - DMA - IOP - Serial Communication.

UNIT V MEMORY ORGANIZATION AND CPU 9

Memory Hierarchy - Main Memory - Auxiliary Memory - Associative Memory - Cache Memory - Virtual Memory - Memory Management Hardware - CPU: General Register Organization - Control Word - Stack Organization - Instruction Format - Addressing Modes - Data Transfer And Manipulation - Program Control.

Total No. of Periods: 45

TEXT BOOKS:

- 1 .M.Morris Mano, "Computer System Architecture", 3rd Edition, Prentice Hall of India,2005.
2. John P.Hayes, "Computer Architecture and Organization", 3rd Edition, Tata McGraw Hill,1998.

REFERENCES:

1. William Stallings, "Computer Organization and Architecture", 5th Edition, Pearson Education, 2001.
2. V.C.Hamatcher, et al, "Computer Organization", 5th Edition, Tata McGraw Hill, 2002.

PCA102 PROBLEM SOLVING AND PROGRAMMING

**L T P C
3 1 0 4**

Goal

The student should understand the basic structure and operations of programming.

Objectives

The course should enable the students:

- To learn the problem solving aspects using top down design and implementation of efficient algorithms.
- To learn the basic fundamental algorithms.
- To learn the nitty gritty of C language.
- To learn various data structures.
- To study pointers and file management.

Outcome

The student should be able to:

- Understand the problem solving aspects using top down design.
- Understand the basic fundamental algorithms.
- Appreciate the fundamentals of C language by solving real world problems.
- Understand and implement various data structures.
- Manage the file using pointers.

UNIT I INTRODUCTION TO COMPUTER PROBLEM SOLVING 9

Introduction - The Problem Solving aspect - Top down Design - Implementation of Algorithms - Program Verification - Efficiency of Algorithms - Analysis of Algorithms

UNIT II FUNDAMENTAL ALGORITHMS 9

Introduction - Exchanging the values - Counting - Factorial Computation - SINE computation - Base Conversion - Factoring Methods - Array Techniques.

UNIT III INTRODUCTION TO C LANGUAGE 9

Overview of C - Constants, Variables and Data Types - Operators and Expressions - Managing Input/ Output Operations - Formatted I/O - Decision Making - Branching -- IF, Nested IF - Switch - goto - Looping- While, do, for statements.

UNIT IV ARRAYS, FUNCTIONS, STRUCTURES AND UNIONS 9

Arrays - dynamic and multi-dimensional arrays - Character arrays and Strings - String handling Functions - User defined Functions - Categories of Functions - Recursion - Structures and Unions - Array of Structures - Structures and Functions

UNIT V POINTERS AND FILE MANAGEMENT 9

Pointers - Declaration, Accessing a variable, character strings, pointers to functions and structures - File Management in C - Dynamic Memory allocation - Linked Lists - Preprocessors.

Total No. of Periods: 45

TEXT BOOKS:

1. R.G.Dromey, "How to Solve it by Computer", PHI, 2007
2. Deitel and Deitel, "C How to Program", Addison Wesley , 2005.

REFERENCES:

1. Brian W.Kernighan & Dennis Ritchie, "C Programming Language", PHI, 1990
2. Byron.S.Gottfried, "Schaum's Outline of Programming with C ", 2nd Edition,Tata McGraw Hill Edition, 2005.

PCA103 INTRODUCTION TO INFORMATION TECHNOLOGY

L T P C
3 1 0 4

Goal

To study about all basic and advanced concepts in the computer science and information technology

Objectives

The course should enable the students:

- To learn the advancement in information technology in various domains.
- To learn about working of various input and output devices
- To learn the different types of storage devices.
- To study about Network applications
- To learn about Programming Techniques to solve computer and cyber crimes.

Outcome

The student should be able to:

- Know about the various applications of information technology in various domains.
- Know about working of various input and output devices.
- Know about various type of storage devices and how the data is stored and retrieved from the storage area
- Know about various network topologies and how data is transmitted over the network.
- Know about various programming solving techniques.

UNIT I INTRODUCTION

9

IT - an Introduction - Information systems - S/W and Data - IT in Business, Industry, Home, at Play , Education, Training, Entertainment, Arts, Science, Engineering and Maths - Computers in Hiding - GPS - Types of Computer - Anatomy of a Computer - Foundation of modern IT - CPU - Memory - Buses - Communication with Peripherals.

UNIT II I/O DEVICES

9

I/O Devices - Inputting Text and Graphics - Pointing devices - Foundation of modern output - Display screens - Printers - Foundation of Modern storage - Storage media -Increasing data storage capacities - The smart Card.

UNIT III S/W INTERFACES

9

S/W Interfaces - Application programs - OS - Document centric computing - S/W issues - Network computing - Editing Documents - Word processing - Features - Formatting documents - Desktop Publishing - Spreadsheet Applications - Database Applications - Queries - Internet Connectivity.

UNIT IV NETWORK APPLICATIONS**9**

Network applications - Foundation of Modern Networks - LAN - WAN - Links between Networks - High Bandwidth Connections - Multimedia - Tools of Multimedia - Delivering Multimedia - Multimedia on the Web - Corporate Computing - Transaction Processing - Management Control - Marketing - Advertising, Sales, Design, Production and Manufacturing - Business on the Internet - Outside computing - Careers - Keeping up to date.

UNIT V PROGRAMMING TECHNIQUES**9**

Programs - Concepts of Programming - Programming Techniques - Corporate Development - Computers and Health - Viruses - Computer Crime - Cryptography - Business issue.

Total No. of Periods: 45**TEXT BOOKS:**

1. D.P. Curtin, K. Foley, K.Sen and C. Morin, "Information Technology - The Breaking Wave", TMH Edition, 1998
2. ITL ESL, "Introduction to Information Technology", Pearson Education, 2005.

REFERENCES:

1. Alexis Leon & Mathews Leon, "Fundamentals of Information Technology", Vikas Publishing House Pvt. Ltd., 1999.
2. Sawyer, Williams and Hutchinson, "Using Information Technology - Brief Version", 3rd edition, McGrawHill International edition, 1999.

PCA104 PROGRAMMING LAB**L T P C**
0 0 3 1**Goal**

To make the students to perform programming using 'C'.

Objectives

The course should enable the students:

- To develop a program for manipulation of the numbers
- To learn to develop program for manipulating strings
- To learn to develop program for summation of sine ,cosine and exponential series
- To learn to develop an application program
- To learn to develop a program using Structures.

Outcome

The student should be able to:

- Develop program for manipulation of the numbers

- Develop program for manipulating strings
- Develop program for summation of sine ,cosine and exponential series
- Develop an application program
- Develop a program using Structures.

List of Experiments

1. Display the following:
 - i) Floyd's triangle
 - ii) Pascal Triangle
2. Generate the following series of numbers:
 - i) Armstrong numbers between 1 to 100
 - ii) Prime numbers between 1 to 50
 - iii) Fibonacci series up to N numbers
3. Manipulate the strings with following operations.
 - (i) Concatenating two strings
 - (ii) Reversing the string
 - (iii) Finding the substring
 - (iv) Replacing a string
 - (v) Finding length of the string
4. Find the summation of the following series:
 - i) Sine
 - ii) Cosine
 - iii) Exponential
5. Create a sales report for M sales person and N products using two dimensional array.
6. Simulate following Banking operations using functions.
 - i) Deposit
 - ii) Withdrawal
 - iii) Balance Enquiry
7. Implement using Recursion
 - i) Find the solution of Towers of Hanoi problem using Recursion.
 - ii) Fibonacci number generation.
 - iii) Factorial

8. Generate Student mark sheets using structures.
9. Create a collection of books using arrays of structures and do the following:
 - i) Search a book with title and author name
 - ii) Sort the books on title.

PCA105 ACCOUNTING AND FINANCIAL MANAGEMENT LAB

L T P C
0 0 3 1

Goal

To formulate a software program for Accounting and business problems.

Objectives

The course should enable the students:

- To learn about budget preparation.
- To learn about ledger preparation
- To prepare balance sheet
- To prepare profit and loss account
- To estimate working capital requirements

Outcome

The student should be able to:

- Prepare budget for the company
- Prepare ledger
- Prepare a balance sheet
- Prepare profit and loss account
- Understand the estimation of working capital requirements

List of Experiments

1. Budget Preparation.
2. Ledger Preparation
3. Balance Sheet Preparation.
4. Generate reports on monthly and daily basis.
5. Estimation of working capital requirements.
6. Preparation of profit/Loss account.
7. Ratio analysis.

SEMESTER - II

PCA201 OPERATING SYSTEMS

L T P C
3 0 2 4

Goal

To learn different types of operating system, memory management and I/O systems.

Objectives

The course should enable the students:

- To learn about designing the components of operating systems
- To learn about process management
- To learn about Process synchronization and deadlock handling
- To learn about various types of memory management techniques
- To learn about Disk scheduling and file system

Outcome

The student should be able to:

- Design the components of operating systems
- Understand Process management
- Understand Process synchronization, deadlock handling
- Understand the various types of memory management techniques
- Appreciate the various disk scheduling techniques existing in file system.

UNIT I INTRODUCTION 7

Definition of OS-Mainframe System-Desktop Systems-Multi processor System-Distributed-Clustered-Real time Systems-Handheld Systems-Operating System Structure-System Components-Services-System Calls-System Programs-System Design and Implementation.

UNIT II PROCESS MANAGEMENT 8

Concepts-Process Scheduling-Operations on Processes-Co-operating Processes-Inter Process Communication-CPU Scheduling-Scheduling Concepts-Criteria-Scheduling Algorithms-Multiprocessor Scheduling-Real time Scheduling.

UNIT III PROCESS SYNCHRONIZATION 10

Critical Section-Synchronization Hardware-Semaphores-Problems of Synchronization-Critical Regions-Monitors-Deadlocks-Characterization-Handling Deadlocks-Deadlock Prevention-Avoidance-Detection-Deadlock Recovery

UNIT IV MEMORY MANAGEMENT 10

Storage Hierarchy-Storage Management Strategies-Contiguous-Non Contiguous Storage Allocation-

Single User-Fixed Partition-Variable Partition-Swapping-Virtual Memory-Basic Concepts-Multilevel Organization-Block Mapping-Paging-Segmentation-Page Replacement Methods-Locality-Working Sets

UNIT V I/O AND FILE SYSTEMS

10

Disk Scheduling-File Concepts-File System Structure-Access Methods-Directory Structure-Protection-Directory Implementation-Allocation Methods-Free Space Management-Case Study: Linux System.

Total No. of Periods: 45

TEXT BOOKS:

1. Silberschatz and Galvin, "Operating System Concepts", 6th Edition, John Wiley & Sons, Inc., 2004.
2. Milankovic M., "Operating System Concepts and Design", 2nd Edition, Tata McGraw Hill, 2001.

REFERENCES:

1. P.C.Bhatt, "An Introduction to Operating Systems-Concepts and Practice", Prentice Hall Of India, 2004
2. H.M.Deitel, "An Introduction to Operating Systems", 2nd Edition, Pearson Education, 2002.

PCA202 OBJECT ORIENTED PROGRAMMING

L T P C
3 1 0 4

Goal

To understand the structure and operations of object oriented programming.

Objectives

The course should enable the students:

- To learn about class and object paradigm.
- To learn about function and operator overloading.
- To learn about inheritance
- To learn about virtual function and friend functions
- To study about exception handling mechanisms, roles and kinds of classes and application frameworks.

Outcome

The student should be able to:

- Understand and implement various class and object
- Understand about the different types of overloading
- Understand about virtual function and friend function and its use.

- Understand about the roles and kinds of classes
- Understand about application frameworks.

UNIT I OOP PARADIGM 8

Programming Paradigms - Procedural Programming - Modularity - Exception Handling - Data Abstraction - User Defined Types - Concrete Types - Abstract Types - Virtual Functions - Object Oriented Programming - Generic Programming - Containers - Algorithms.

UNIT II INTRODUCTION TO C++ 11

Overview of C++ - Classes and Objects - Friend Functions - Friend Classes - Inline Function - Static Members - Arrays - Pointers - References - Dynamic Allocation.

UNIT III OVERLOADING 7

Function Overloading - Overloading Constructor Functions - Copy Constructors - Default Argument - Operator Overloading - Member Operator Overloading - Overloading new and delete.

UNIT IV ADDITIONAL FEATURES 10

Inheritance - Base Class - Access Control - Virtual Functions - Pure Virtual Functions - Templates - Generic Functions - Applying Generic Functions - Generic Classes - Exception Handling - C++ I/O Streams - File I/O - STL - Overview - Container Classes - Lists - Maps - Algorithms Using Functions and Objects - String Class

UNIT V DESIGN CONCEPTS 9

Role of Classes - Kinds of Classes - Concrete Types - Abstract Types - Nodes - Changing Interfaces - Object I/O - Actions - Interface Classes - Handles - Use Counts Applications frame works.

Total No. of Periods: 45

TEXT BOOKS:

1. Herbert Schildt, "C++ The Complete Reference", Tata McGraw Hill Edition, 2003 (Unit 2, 3,4)
2. Bjanne Stroustrup, "The C++ Programming Language", 3rd Edition, Addison Wesley, 2000 (Unit 1 & 5)

REFERENCES:

1. Robert Lafore, "Waite Groups OOP in Turbo C++", Galgotia Publications, 2001
2. Stanley, B.Lippman, Jove Lagrie, "C++Primer", 4th Edition, Addison Wesley, 2007.

PCA203 DATABASE MANAGEMENT SYSTEMS

L T P C
3 1 0 4

Goal

To understand how to create and manage a database for any given application.

Objectives

The course should enable the students to:

- Introduce how to represent data in a database for a given application.
- Provide with a detailed theoretical knowledge of how database management systems are implemented
- Understand how efficient applications are designed and implemented to work on DBMS.
- Understand how queries are evaluated
- Helps understand transaction management and recovery systems.

Outcome

The student should be able to:

- Describe fundamental elements of a relational database management system
- Explain the basic concepts of relational data model, ER model, relational database design and database language SQL
- Design ER diagrams to represent simple database application scenarios
- Convert ER diagrams into relational tables, populate a relational database and formulate SQL queries on the data
- Criticize a database design and improve the design by normalization.

UNIT I INTRODUCTION

9

Database Systems vs. File Systems-View of Data- Data Models-Database Languages-Transaction Management-Database Systems Structure-History of Database Systems-Database Systems Applications-Entity Relationship Model.

UNIT II RELATIONAL DATABASES

9

SQL-Basic Structure-Set Operations-Complex Queries-Joined Queries-DDL-Embedded SQL-Dynamic SQL-Other SQL Functions-Query by Example-Integrity and Security of searching-Relational Database Design

UNIT III DATA STORAGE AND INDEXING

9

Storage & File Structure-Disks-RAID-File Organization-Indexing & Hashing-B+ TREE-B Tree-Static Hashing-Dynamic Hashing-Multiple Key Access.

UNIT IV QUERY EVALUATION & OPTIMIZATION

9

Query Processing-Selection Operation-Sorting-Join Operation-Evaluation of Expressions-Query Optimization.

UNIT V TRANSACTION MANAGEMENT

9

Transaction Concept-Static Implementation-Concurrency Control-Protocols-Deadlock Handling-Recovery Systems-Recovery with Concurrent Transactions-Shadow Paging-Buffer Management-Case Studies-Oracle-Microsoft SQL Server.

Total No.of Periods: 45

TEXT BOOKS:

1. Abraham Silberschatz, Henry F.Korth and S.Sudharssan, "Database System Concepts", 5th Edition, Tata McGraw Hill, 2006.
2. Raghu Ramakrishnan & Johannesgerhrke, "Database Management Systems", 3rd Edition, Tata McGraw Hill International Edition, 2003.

REFERENCES:

1. Elmasri , Navathe, "Fundamentals of Database System" 3rd edition, Pearson Education, 2008.
2. JeffereyA.Hoffer, Mary Prescott, "Modern Database Management" 8th edition, PHI,2008.

PCA 204 DATA STRUCTURES

L T P C
3 1 0 4

Goal

To learn various types of data structures and their functions.

Objectives

The course should enable the students:

- To learn about various data structures.
- To learn about trees, associated operations and representation.
- To learn various sorting and searching techniques.
- To learn about graph and its application.
- To learn effective storage management using different techniques.

Outcome

The student should be able to:

- Implement and interpret various data structures and its representation.
- Understand and appreciate the trees and the associated merits of executing different operations on it.

- Understand the different sorting and searching techniques.
- Implement various graph techniques and witness its merits and applications.
- Understand effective storage management.

UNIT I DATA STRUCTURES 9

Introduction - Arrays - Structures - Stack: Definition and examples, Representing Stacks - Queues and lists: Queue and its Representation, lists - Applications of Stack, Queue and Linked Lists.

UNIT II TREES 9

Binary Trees - Operations on Binary trees - Binary Tree Representations - node representation, internal and external nodes, implicit array representation - Binary tree Traversals - Huffman Algorithm - Representing Lists as Binary Trees.

UNIT III SORTING AND SEARCHING 9

General Background - Exchange sorts - Selection and Tree Sorting - Insertion Sorts - Merge and Radix Sorts - Basic Search Techniques - Tree Searching - General Search Trees - Hashing.

UNIT IV GRAPHS AND THEIR APPLICATIONS 9

Graphs - An application of graphs - Representation - Transitive closure - Warshall's algorithm - Shortest path algorithm - a flow Problem - Dijkstra's algorithm - An application of scheduling - Linked representation of Graphs - Graph Traversals

UNIT V STORAGE MANAGEMENT 9

General Lists: Operations, linked list representation, using lists, Freeing list nodes - Automatic list Management: Reference count method, Garbage Collection, Algorithms, Collection and compaction

Total No.of Periods: 45

TEXT BOOKS:

1. Tanenbaum A.S., Langsam Y. Augestein M.J," Data Structures using C", Pearson Education, 2004
2. Robert Kruse & Clovis L.Tondo, "Data Structures and Program Design in C", Prentice Hall , 2nd edition., 2003

REFERENCES:

1. Weiss, "Data Structures and Algorithm Analysis in C", Addison Wesley, Second Edition, 2005.
2. Y.Langsam, M.J.Augestein, A.M.Tanenbaum, "Data Structures Using C and C++", 2nd Edition, Prentice Hall of India, 2000.

PCA205 DESIGN AND ANALYSIS OF ALGORITHMS

L	T	P	C
3	1	0	4

Goal

To design and analyze the complexities of algorithms.

Objectives

The course should enable the students:

- To learn about the time and space complexity of algorithms.
- To learn about various sorting algorithms.
- To learn the different types of searching algorithms
- To study various algorithm design techniques
- To learn the advanced algorithms.

Outcome

The student should be able to:

- Calculate the time complexity and space complexity of algorithms and express it using appropriate notations
- Compare and implement the different types of search structures.
- Implement the real life problems using suitable algorithm design technique.
- Understand advanced algorithms
- Understand the method of applying various algorithm in real time.

UNIT I INTRODUCTION

10

Fundamentals of algorithmic problem solving - Important problem types - Fundamentals of the analysis of algorithm efficiency - analysis frame work - Asymptotic notations - Mathematical analysis for recursive and non-recursive algorithms.

UNIT II DIVIDE AND CONQUER METHOD AND GREEDY METHOD

12

Divide and conquer methodology - Merge sort - Quick sort - Binary search - Binary tree traversal - Multiplication of large integers - Strassen's matrix multiplication - Greedy method - Prim's algorithm - Kruskal's algorithm - Dijkstra's algorithm.

UNIT III DYNAMIC PROGRAMMING

12

Computing a binomial coefficient - Warshall's and Floyd's algorithm - Optimal binary search tree - Knapsack problem - Memory functions.

UNIT IV BACKTRACKING AND BRANCH AND BOUND

14

Backtracking - N-Queens problem - Hamiltonian circuit problem - Subset sum problem - Branch and bound - Assignment problem - Knapsack problem - Traveling salesman problem.

UNIT V NP-HARD AND NP-COMPLETE PROBLEMS

12

P & NP problems - NP-complete problems - Approximation algorithms for NP-hard problems - Traveling salesman problem - Knapsack problem.

Total No. of periods : 60

TEXT BOOKS:

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Pearson Education, 2003.
2. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, "Introduction to Algorithms", 2nd Edition, Prentice Hall of India, 2004.

REFERENCES:

1. Schweiz, "Introduction to the Design & Analysis of Algorithms", 2nd Edition, 2008 Pearson Education.
2. Baase Van Geldin, "Computer Algorithms", 3rd edition, Pearson Education, 2006.

PCA206 OBJECT ORIENTED PROGRAMMING LAB

L T P C
0 0 3 1

Goal

To learn to program using object oriented concepts and techniques.

Objectives

The course should enable the students:

- To learn about working with classes and objects
- To learn about the use of constructor and destructor
- To develop programs using concepts of inheritance and polymorphism
- To develop program using friend function, virtual function and exception handling mechanism
- To develop program using files.

Outcome

The student should be able:

- To develop program using classes and objects
- To develop program using constructor and destructor
- To develop program using the concepts of inheritance and polymorphism
- To develop program using friend function, virtual function and exception handling mechanism
- To develop program using files

List of Experiments

1. Programs using Constructor and Destructor.
2. Creation of classes and use of different types of functions.
3. Count the number of objects created for a class using static member function.
4. Write programs using function overloading and operator overloading.
5. Programs using inheritance.
6. Program using friend functions.
7. Program using virtual function.
8. Write a program using exception handling mechanism.
9. Programs using files.
10. Programs using function templates.

PCA207 DATABASE MANAGEMENT SYSTEMS LAB

L T P C
0 0 3 1

Goal

To learn designing of relational database systems and querying relational databases.

Objectives

The course should enable the students:

- To execute DML ,DDL and TCL commands
- To create views, partitions and locks for a particular DB
- To write and execute a procedure in PL/SQL for an application using exception handling and cursors
- To write and execute a procedure in PL/SQL for an application using functions and triggers
- To write and execute a procedure in PL/SQL for an application using package

Outcome

The student should be able to:

- Execute DDL,DML and TCL commands
- Creating views ,partitions and locks for a particular data base.
- Create and execute procedure for an application using exception handling and cursors
- Create and execute procedure for an application using triggers
- Create and execute procedure for an application using package.

List of Experiments

1. Execute a single line and group functions for a table.
2. Execute DCL and TCL Commands.
3. Create and manipulate various DB objects for a table.
4. Create views, partitions and locks for a particular DB.
5. Write PL/SQL procedure for an application using exception handling.
6. Write PL/SQL procedure for an application using cursors.
7. Write a DBMS program to prepare reports for an application using functions.
8. Write a PL/SQL block for transaction operations of a typical application using triggers.
9. Write a PL/SQL block for transaction operations of a typical application using package.
10. Design and develop an application using any front end and back end tool (make use of ER diagram and DFD).

Typical Applications - Banking, Electricity Billing, Library Operation, Pay roll, Insurance, Inventory, etc.

PCA208 DATA STRUCTURES LAB

L T P C
0 0 3 1

Goal

To help the students gain a knowledge and insight on various data structures and its applications, usage and challenges.

Objectives

The course should enable the students:

- To represent the sparse matrix, stack and queue using arrays and linked lists.
- To implement the operations on singly linked list, doubly linked list and circular linked list.
- To perform traversals on binary search tree and operations of node addition and deletion.
- To sort the given list of numbers using heap and quick sort.

To perform graph operations like depth first search and breadth first search, shortest path using Dijkstra algorithm.

Outcome

The student should be able to:

- Implement sparse matrix, stack and queue using arrays and linked lists.
- Implement the various operations on singly linked list, doubly linked list and circular linked list.

- Appreciate the different traversal on binary search tree.
- Implement the sorting of numbers using heap and quick sort.
- Implement search operations on graph using Dijkstra algorithm.

List of Experiments

1. Represent the given sparse matrix using one dimensional array and linked list.
2. Create a Stack and do the following operations using arrays and linked lists
(i)Push (ii) Pop (iii) Peep
3. Create a Queue and do the following operations using arrays and linked lists
(i)Add (ii) Remove
4. Implement the operations on singly linked list, doubly linked list and circular linked list.
5. Create a binary search tree and do the following traversals
(i)In-order (ii) Pre order (iii) Post order
6. Implement the following operations on a binary search tree.
(i) Insert a node (ii) Delete a node
7. Sort the given list of numbers using heap and quick sort.
8. Perform the following operations in a given graph
(i) Depth first search (ii) Breadth first search
9. Find the shortest path in a given graph using Dijkstra algorithm.

SEMESTER - III
PCA301 COMPUTER NETWORKS

L T P C
3 0 0 3

Goal

To learn about computer networks and its layers.

Objectives

The course should enable the students:

- To learn about ISO -OSI reference model
- To learn about network topologies
- To learn about functions of network layer
- To learn about functions of Transport layer
- To learn about functions of Presentation layer

Outcome

The students should be able to understand about

- ISO -OSI reference model
- Network topologies
- Functions of network layer
- Functions of Transport layer
- Functions of Presentation layer.

UNIT I INTRODUCTION 9

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

UNIT II NETWORK FUNDAMENTALS 9

LAN Technology - LAN Architecture - Bus - Tree - Ring - Star - Ethernet - Token Rings - Wireless.

UNIT III NETWORK LAYER 9

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

UNIT IV TRANSPORT LAYER 9

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

UNIT V PRESENTATION LAYER AND APPLICATIONS

9

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

Total No. of Periods: 45

TEXT BOOKS:

1. Larry L. Peterson & Bruce S. Davie, "Computer Networks - A Systems Approach", 4th Edition, Harcourt Asia/Morgan Kaufmann, 2007.
2. James F. Kurose and Keith W. Ross, "Computer Networking - A Top Down approach Featuring the Internet", 1st Edition, Addison Wesley Publishing Company, 2001.

REFERENCES:

1. William Stallings, "Data and Computer Communications", 7th Edition, PHI, 2005.
2. Andrew S. Tanenbaum, "Computer Networks", Tata Mcgraw Hill, 3rd Edition, 2001.

PCA302 MICROPROCESSORS AND ITS APPLICATIONS

L T P C
3 1 0 4

Goal

To learn about assembly level languages.

Objectives

The course should enable the students:

- To learn about evolution of microprocessor and INTEL 8085 microprocessor
- To learn about the architecture of INTEL 8086 microprocessor
- To learn about 8086 microprocessor interfacing
- To learn about the architecture of INTEL 80386 microprocessor
- To learn about the peripheral interfacing.

Outcome

The student should be able to understand:

- About evolution of microprocessor and INTEL 8085 microprocessor
- About the architecture of INTEL 8086 microprocessor
- About 8086 microprocessor interfacing
- About the architecture of INTEL 80386 microprocessor
- About the peripheral interfacing.

UNIT I	INTRODUCTION TO 8085 MICROPROCESSOR	12
Evolution of the Microprocessor - INTEL 8085- Introduction- Register Architecture - Memory Addressing - 8085 Addressing Modes -8085 Instruction Set -Timing Methods 8085 Pins and Signals -8085 Instruction Timing and Execution -Interrupts-DMA- Serial port-8085 Based System Design		
UNIT II	INTRODUCTION TO 8086 MICROPROCESSOR	12
Introduction -8086 Architecture -8086 Addressing Modes -8086 Instruction Set -Data Movement Instructions Arithmetic and Logic Instructions - Program Control Instructions		
UNIT III	8086 MICROPROCESSOR INTERFACING	12
System Design Using 8086- Basic System concepts-Bus Cycle - Address and data bus concepts-interfacing with memories-RAM - EPROM - DRAMs - Programmed I/O : 8086-Based Microcomputer.		
UNIT IV	80386 AND PENTIUM MICROPROCESSORS	12
Introduction to Intel 80386- Basic Programming model - Memory Organization - I/O Space - 80386 pins and signals- Bus transfer techniques - 80386 Modes - Introduction to Intel Pentium Microprocessor: Block diagram and Registers.		
UNIT V	PERIPHERAL INTERFACING	12
Keyboard Display Interface-Hex key and display interface to 8085, 8279 Keyboard display controller chip- Printer Interface: LR 7040 Printer interface using 8295 printer controller-CRT controller interface: CRT Fundamentals, 8275 CRT Controller- Coprocessors.		

Total No. of Periods: 60

TEXT BOOKS:

1. Mohamed Rafiqzaman, "Introduction to Microprocessors and Microcomputer- Based System Design", 2nd edition, CRC Press, 2008.
2. Walter A.Triebel, Avtar Singh, "The 8088 and 8086 Microprocessors Programming, Interfacing, Software, Hardware and Applications", Prentice Hall of India Pvt.Ltd.,2002.

REFERENCES:

1. Mohamed Rafiqzaman, "Microprocessor - Theory & Applications : Intel, Motorola", PHI, 2003
2. Barry B.Brey, "The INTEL Microprocessors 8086/8088, 80186, 80286, 80386 and 80486 Architecture, Programming and Interfacing", Prentice Hall of India, 2001.

PCA303 JAVA PROGRAMMING

L T P C
3 1 0 4

Goal

To learn about JAVA Programming and its fundamentals.

Objectives

The course should enable the students:

- To learn about Java fundamentals
- To learn about Classes and Objects with simple programs
- To learn about Java data structures, packages & Inheritance concepts.
- To learn about Window & Graphics(applets)
- To learn about GUI based component using awt.

Outcome

The student should be able to:

- Understand the fundamental Concepts of Java
- Understand about classes , objects & able to write simple program using classes and objects in java
- Understand the Java data structures, packages and inheritance concepts.
- Understand about windows and graphics(applets)
- Understand the GUI component using awt controls, packages etc.,

UNIT I JAVA FUNDAMENTALS

12

Introduction to Java Characteristics of Java -A Brief History of Java -Types of Java Programs -Java Application Programs - Command Line Arguments - Java Applets - Java Runtime Environment (JRE)-Java Virtual Machine-Java Developer's Kit (JDK)-Some Java Terminology-Java Developer's Kit Elements of the Java Language - Structure of a Java Program - Data Types -Java Variables (Identifiers) -Java Literal -Comments in a Program-Operators

UNIT II CLASSES AND OBJECTS

12

Objects and Classes - Defining a Class -Constructors - Multiple Constructors -Inner Classes-Abstract Classes -Wrapper Classes - Conversion of Data Types -Command Line Input of Numeric Data-Input from Keyboard-Attributes and Methods - Attributes- Method Overriding - Objects as Parameters - Date Class -College System-A Simple Case Study- Control Structures - if Structure - Break Statement and Labeled Break -Switch Structure - Loop Structures -While Structure -do-While Structure - For Loop - Nested Loops - Continue Statement.

UNIT III JAVA LANGUAGE

12

Data Structures -Arrays -Recursion -Multidimensional Array- Vectors and ArrayList Classes - Stack

Class - BitSet Class - HashTable Class - String Classes- Inheritance, Interfaces and Packages- Inheritance -Types of Inheritance -Example of Inheritance Implementations - Polymorphism -Employee Example - Inheritance Used in Geometry - Interfaces - Packages.

UNIT IV WINDOWS AND GRAPHICS

12

Windows and Applets - Frame Class - Creating and Displaying a Frame - Adapter Classes - Displaying Messages in a Window - Font Class -Font Metrics Class - Color Class - Component Class Methods -Dialog Box-File Dialog- Applets - Graphics Class -Graphics Class and Creation of Graphics Objects - Font Settings-Line Drawing - Rectangles - Circle and Oval - Arc Drawing -Point Class Example - Rectangle Class Example- Polygon Class.

UNIT V GRAPHICAL USER INTERFACES USING JAVA - AWT

12

AWT GUI Components Button, Label, Checkbox, Choice and List - Buttons - Label Class - Checkbox and Radio Button (Checkbox Group)- Choice Class and List ClassAWT Text Components and Menu - Text Component Class - Text Field Class - Scrollbar Class- Text Area Class -MenuBar and Menu Class

Total No. of Periods: 60

TEXT BOOK:

1. C. Xavier, Java Programming: A practical approach, McGraw Hill India Education 2011.

REFERENCES:

1. Keyur Shah, "Gateway to Java Programmer Sun Certification", Tata McGraw Hill 2007.
2. Deitel&Deitel, "Java How to Program", Prentice Hall, 5th edition 2005.
3. Herbert Schildt, "The Complete Reference - Java 2", 5th Edition, Tata McGraw Hill, 2007.

PCA304 COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

L T P C
3 0 0 3

Goal

To learn the basics of computer graphics and various dimensional transformations.

Objectives

The course should enable the students:

- To learn the overview of graphic systems
- To learn about the 2D Transformations
- To learn about the 3D Transformations
- To learn about the Multimedia Concepts
- To learn the Systems and Applications of Multimedia.

Outcome

The student should be able to:

- Understand overview of graphic systems
- Understand the types of Transformations and 2D Transformations Concepts
- Understand the 3D Transformation Concepts
- Understand the various surface detection methods & multimedia concepts
- Understand the Applications of multimedia.

UNIT I INTRODUCTION 12

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

UNIT II 2D TRANSFORMATIONS 12

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

UNIT III 3D TRANSFORMATIONS 12

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 12

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

UNIT V MULTIMEDIA SYSTEMS AND APPLICATIONS 12

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

Total No. of Periods : 60

TEXT BOOKS:

1. Hearn D and Baker M.P, "Computer graphics - C Version", 2nd Edition, Pearson Education, 2006(unit 1, 2 &3)
2. Ralf Steinmetz, Klara Steinmetz, "Multimedia Computing, Communications and Applications", Pearson Education, 2004(unit 4 & 5)

REFERENCES:

1. John Villamil, Casanova and Leony Fernandez, Eliar, "Multimedia Graphics", PHI, 2002.
2. Siamon J. Gibbs and Dionysios C. Tschritzis, "Multimedia Programming", Addison Wesley, 1995.

Goal

To write assembly level program for various arithmetic and string operations.

Objectives

The course should enable the students:

- To write an assembly level language program for performing arithmetic operations and string manipulation.
- To write an assembly level program to interface Programmable Peripheral Interface, Programmable Timer.
- To write an assembly level program to perform power on self test
- To write an assembly level program for floppy disk trouble shooting
- To write an assembly level program for printer trouble shooting.

Outcome

The students should be able to:

- Understand various arithmetic operations and string manipulation
- Understand the operation required to interface Programmable Peripheral Interface and Programmable Timer
- Know the method for performing power on self test
- Understand the activities required for floppy disk trouble shooting
- Understand the operations needed for printer trouble shooting

List of Experiments

1. Write an assembly language program to perform arithmetic operations on block of data using Hexadecimal numbers.
2. Write an assembly language program to perform arithmetic operations on block of data using BCD numbers.
3. Write an assembly language program to perform byte and string manipulation.
4. Write an assembly language program to interface Programmable Peripheral Interface.
5. Write an assembly language program to interface Programmable Timer.
6. Write an assembly language program to interface Programmable Communication Interface.
7. Write an assembly language program to interface Keyboard/Display Controller.
8. Write a program to Perform Power on Self Test.
9. Write a program for floppy disk trouble shooting.

10. Write a program for printer trouble shooting.

PCA306 JAVA PROGRAMMING LAB

L T P C
0 0 3 1

Goal

To learn about JAVA programming techniques.

Objectives

The course should enable the students:

- To learn about simple java programming, overloading and overriding
- To learn about interfaces and packages, exception handling mechanisms & Thread concepts
- To learn the implementation of I/O packages & file operations.
- To learn about applets and swings
- To learn about util packages & JDBC connectivity.

Outcome

The student should be able to:

- Understand the simple java programming, overloading and overriding
- Understand about interfaces and packages, exception handling mechanisms & Thread concepts
- Understand the I/O packages & file operations.
- Understand about applets and swings
- Understand the util packages & JDBC connectivity.

List of Experiments

1. Program to illustrate the use of overloading and overriding.
2. Program to implement the concept of Interfaces and packages.
3. Generate the program using exceptions handling mechanism.
4. Program to achieve Inter thread communication and deadlock avoidance.
5. Implement the file operations.
6. Program using Applets.
7. Program using JDBC.
8. Program using JNI concepts.
9. Program to illustrate the use of Remote Method Invocation.
10. Program using Servlets.

Goal

To develop program using graphics functions and basic multimedia techniques.

Objectives

The course should enable the students:

- To develop program for fundamental graphics function
- To develop program for line and circle drawing algorithm
- To develop program for clipping algorithm
- To develop program for 2D and 3D transformation
- To create animation sequence using FLASH and Photoshop.

Outcome

The student should be able to:

- Develop and implement a program for fundamental graphics function
- Develop and implement a program for line and circle drawing algorithm
- Develop and implement a program for clipping algorithm
- Develop and implement a program for 2D and 3D transformation
- Do animation process with FLASH and Photoshop.

List of Experiments

1. Write a C program with Fundamental Graphics Function
2. Write a C program for Line drawing using Bresenham, DDA Line Drawing Algorithms.
3. Write a C program for Circle Drawing using Bresenham Circle Drawing Algorithm.
4. Write a C program for Clipping Algorithm using Line Clipping.
5. Write a C program for 2D Transformations like Translations and Scaling and Rotations.
6. Write a C program for 3D Transformations like Translations and Scaling and Rotations.
7. Create Frame by Frame Animations using multimedia authoring tools.
8. Develop a presentation for a product using techniques like Guide Layer, masking and onion Skin using authoring tools.
9. Create a Jpeg image which demonstrates the various features of an image editing tool.
10. Demonstrate Rasterization and filtering of layers and give blending effects for a logo.

SEMESTER - IV
PCA401 ADVANCED JAVA PROGRAMMING

L T P C
3 1 0 4

Goal

To learn about advanced JAVA programming.

Objectives

The course should enable the students:

- To learn about advanced GUI development using java
- To learn about JDBC concepts
- To learn about Threading and Multithreading.
- To learn about Servlet based application development
- To learn about RMI and network programming.

Outcome

The student should be able to:

- Understand the advanced GUI development using java
- Understand about JDBC concepts.
- Understand the Threading and Multithreading
- Understand about Servlet based application development
- Understand the RMI and network programming.

UNIT I ADVANCED GUI DEVELOPMENT USING JAVA 12

Swings - Summary of Swing Classes - Buttons, Labels, Checkbox, Text Components and Menu Components in Swings-Some Working Examples of Swing Classes - JTree Class - JTable Class - Events and Exception Handling - Event Classes - Event Generators - Event Listener - Key Events - Mouse Event - Exception Class - Try and Catch -Multiple Catch-Exception Types - Throw and Throws - User Defined Exceptions

UNIT II JDBC 12

Java Database Connectivity JDBC Drivers - Statements - Caching Database Results - Storing Classes, Images and Other Large Objects - Controlling Transactions - Escaping Characters - Mapping Database Types - Mapping Date Types -Review Questions - Lab Projects-Industry Projects.

UNIT III THREAD AND MULTITHREADING 12

Multithreading - Multitasking and Multithreading - The Thread Class - Defining and Running a Thread -Methods of Thread Class Review Questions - Lab Projects-Industry Projects.

UNIT IV SERVLET BASED APPLICATION DEVELOPMENT 12

Java Servlet -Servlet Environment and Role - Protocol Support -HTML Support -Replacing CGI Scripts - Installing Servlets Using Java Web Server -Servlet API - The Servlet Life Cycle-Welcome Servlet -

Servlet Context - HTTP Support - HTML to Servlet Communication -Review Questions-Lab Projects-Industry Projects

UNIT V RMI AND NETWORK PROGRAMMING

12

Remote Method Invocation - Introduction - Define the Functions of the Remote Class as an Interface - Write the Implementation and Server Classes - Implement a Remote Interface -Define the Constructor for the Remote Object - Provide an Implementation for each Remote Method - Register the Remote Object - A Client Program that Uses the Remote Service - Network Programming - Networking Basics -Java.net Package Overview- Socket Classes -Socket Programming.

Total No of periods: 60

TEXT BOOK:

1. C. Xavier, Java Programming: A practical approach, McGraw Hill India Education 2011.

REFERENCES:

1. Herbert Schildt, "The Complete Reference - Java 2", 5th Edition, Tata McGraw Hill, 2007.
2. Robert Orfali, Dan Harkey and Jeri Edwards, "The Essential Client/Server Survival Guide", Galgotia Publications Pvt. Ltd., 2002.
3. Tom Valesky, "Enterprise Java Beans", Pearson Education, 2002.

PCA402 OBJECT ORIENTED ANALYSIS AND DESIGN

L T P C
3 0 2 4

Goal

To make the students appreciate the development of software using object oriented techniques and paradigms.

Objectives

The course should enable the students:

- To educate them about the object basics, class and Meta class.
- To learn about UML and various methodologies.
- To give a perspective on object oriented analysis.
- To orient and give the students an insight about object oriented design and its features.
- To learn about various testing strategies for developing a quality software.

Outcome

The student should be able to:

- Understand and implement object instantiation with pertinent attributes and methods.
- Perform a business process modeling using UML and various methodologies.
- Understand the nuances and knack of object oriented analysis.

- Implement and deploy various object oriented design and its axioms.
- Understand the modus operandi of developing quality software.

UNIT I INTRODUCTION 12

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

UNIT II METHODOLOGY AND UML 12

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 12

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 12

Design process - Axioms - Corollaries - 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 12

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

Total No of Periods: 60

TEXT BOOKS:

1. Ali Bahrami, "Object Oriented System Development", McGraw Hill International Edition, 1999.
2. Stephan R. Schach, "Introduction to Object Oriented Analysis and Design with UML and the Unified Process", TMH, 2003

REFERENCES:

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

PCA403 VISUAL PROGRAMMING

L T P C
3 1 0 4

Goal

To learn to use the VB IDE, .NET CLR, CLS and class library to develop windows desktop applications.

Objectives

The course should enable the students:

- To learn about the Windows programming and Visual C++ programming techniques.
- To learn the nuances of creating application framework.
- To give an insight on document and view architecture.
- To assimilate the ACTIVEX controls and OLE objects.
- To highlight the database connection and management using Microsoft ODBC.

Outcome

The student should be able to:

- Understand the Windows programming and Visual C++ programming techniques
- Understand the nuances of creating application framework.
- Appreciate the document and view architecture.
- Understand the ACTIVEX controls and OLE objects.
- Understand the database connection and management using Microsoft ODBC.

UNIT I WINDOWS PROGRAMMING

12

Windows environment - a simple windows program - windows and messages - creating the window - displaying the window - message loop - the window procedure - message processing - text output - painting and repainting - introduction to GDI - device context - basic drawing - child window controls

UNIT II VISUAL C++ PROGRAMMING - INTRODUCTION

12

Application Framework - MFC library - Visual C++ Components - Event Handling - Mapping modes - colors - fonts - modal and modeless dialog - windows common Controls bitmaps

UNIT III THE DOCUMENT AND VIEW ARCHITECTURE

12

Menus - Keyboard accelerators - rich edit control - toolbars - status bars - reusable frame window base class - separating document from its view - reading and writing SDI and MDI documents - splitter window and multiple views - creating DLLs - dialog based applications

UNIT IV ACTIVEX AND OBJECT LINKING AND EMBEDDING (OLE)

12

ActiveX controls Vs. Ordinary Windows Controls - Installing ActiveX controls - Calendar Control - ActiveX control container programming - create ActiveX control at runtime - Component Object Model

(COM) - containment and aggregation vs. inheritance - OLE drag and drop - OLE embedded component and containers - sample applications

UNIT V ADVANCED CONCEPTS

12

Database Management with Microsoft ODBC - Structured Query Language - MFC ODBC classes - sample database applications - filter and sort strings - DAO concepts - displaying database records in scrolling view - Threading - VC++ Networking issues - Winsock - WinInet - building a web client - Internet Information Server - ISAPI server extension - chat application - playing and multimedia (sound and video) files

Total No. of Periods: 60

TEXT BOOKS:

1. Charles Petzold, "Windows Programming", Microsoft press, 1996 (Unit I - Chapter 1- 9)
2. David J.Kruglinski, George Shepherd and Scot Wingo, "Programming Visual C++",Microsoft press, 1999 (Unit II - V)

REFERENCE:

1. Steve Holtzner, "Visual C++ 6 Programming", Wiley Dreamtech India Pvt. Ltd., 2003.

PCA404 SOFTWARE ENGINEERING

L T P C
3 0 0 3

Goal

To study about steps and various concepts involved in developing a software.

Objectives

The course should enable the students:

- To learn about various process models.
- To learn about how to draw the requirements.
- To learn the different types of software designing methods.
- To study various software testing methods.
- To learn about quality control and the software configuration management.

Outcome

The student should be able to:

- Understand and implement various process models
- Understand about the requirement analysis.
- Understand about the Software design.

- Understand about different types of testing methods.
- Understand about the methods of quality checking and software configuration management

UNIT I INTRODUCTION 9

A Generic View of Process - Process Models-The Waterfall Model-Incremental Model-Evolutionary Model-Specialized Model-The Unified Process-Agile Process - Agile Models - Software Cost Estimation - Planning - Risk Analysis - Software Project Scheduling.

UNIT II REQUIREMENT ANALYSIS 9

System Engineering Hierarchy - System Modeling - Requirements Engineering: Tasks- Initiating the Process-Eliciting Requirements-Developing Use Cases-Negotiating Requirements-Validating Requirements - Building the Analysis Models: Concepts

UNIT III SOFTWARE DESIGN 9

Design Concepts - Design Models - Pattern Based Design - Architectural Design - Component Level Design - Component - Class Based And Conventional Components Design - User Interface - Analysis And Design

UNIT IV SOFTWARE TESTING 9

\Software Testing - Strategies: Conventional - Object Oriented - Validation Testing - Criteria - Alpha - Beta Testing- System Testing - Recovery - Security - Stress - Performance - Testing Tactics - Testing Fundamentals-Black Box - White Box - Basis Path-Control Structure.

UNIT V SCM AND QUALITY ASSURANCE 9

Software Configuration And Management-Features-SCM Process-Software Quality Concepts - Quality Assurance - Software Review-Technical Reviews - Formal Approach To Software Quality Assurance - Reliability - Quality Standards - Software Quality Assurance Plan

Total No. of periods: 45

TEXT BOOKS:

1. Roger Pressman.S., "Software Engineering: A Practitioner's Approach", 6th Edition, Tata Mcgraw Hill, 2005.
2. Pankaj Jalote, "An Integrated Approach to Software Engineering", 3rd Edition, Narosa Publishing House, 2005.

REFERENCES:

1. P. Fleeger, "Software Engineering", Prentice Hall, 2001, Reprint 2002
2. Carlo Ghezzi, Mehdi Jazayari, Dino Mandrioli, "Fundamentals Of Software Engineering", Second Edition, Prentice Hall Of India 1991, Reprint 2003.
3. I. Sommerville, "Software Engineering", 5th Edition: Addison Wesley, 2001.

Goal

To learn the concepts of Advanced JAVA programming.

Objectives

The course should enable the students to

- Create a distributed application to download various files from different servers using RMI
- Create various graphical shapes and display it using or without using Java Bean and BDk.
- Develop enterprise java bean for various business operations.
- Create an Active-X control and component for currency conversion, encryption and decryption, retrieving information from message box using DCOM/.NET
- Develop middleware components for retrieving stock market exchange information and weather forecast information using CORBA.

Outcome

The student should be able to

- Understand the creation of distributed application to download various files from different servers using RMI
- Decipher the Creation of various graphical shapes and display it using or without using Java Bean and BDk.
- Appreciate the development of enterprise java bean for various business operations.
- Implement the creation of an Active-X control and component for currency conversion, encryption and decryption, retrieving information from message box using DCOM/.NET
- Understand the development of middleware components for retrieving stock market exchange information and weather forecast information using CORBA.

List of Experiments

1. Create a distributed application to download various files from various servers using RMI
2. Create a Java Bean to draw various graphical shapes and display it using or without using BDk
3. Develop an Enterprise Java Bean for Banking operations
4. Develop an Enterprise Java Bean for Library operations
5. Create an Active-X control for File operations
6. Develop a component for converting the currency values using COM / .NET
7. Develop a component for encryption and decryption using COM / .NET
8. Develop a component for retrieving information from message box using DCOM / .NET

9. Develop a middleware component for retrieving Stock Market Exchange information using CORBA
10. Develop a middleware component for retrieving Weather Forecast information using CORBA

PCA406 VISUAL PROGRAMMING LAB

L T P C
0 0 3 1

Goal

To learn to use the VB IDE, .NET CLR, CLS and class library to develop windows desktop applications.

Objectives

The course should enable the students to:

- Develop programs using Application wizard.
- Develop programs to handle basic events like message map, saving a view's state.
- Develop programs to display modal and modeless dialog box, GDI.
- Create programs using static and dynamic controls, document view architecture, tool bar and status bar.
- Develop programs using SDI and MDI serialization, creating DLL using MFC and ways to interface with database.

Outcome

The student should be able to:

- Understand the technique of creating a application wizard
- Create programs to handle basic events like message map, saving a view's state.
- Employ techniques to develop program using modal and modeless dialog box.
- Implement programs using static and dynamic controls, document view architecture, tool bar and status bar.
- Employ mechanism to interface with database using SDI and MDI serialization and create DLL using MFC.

List of Experiments

1. Program using application wizard :
SDI, MDI, Drawing Inside the View Window, Device Context
2. Program to handle basic events:
The message map, saving the view's state, initializing a view class data member
3. Program using graphical device interface objects
4. Program to display model and modeless dialogs.

5. Program using static and dynamic controls
6. Program using document - view architecture
7. Program with tool bars and status bars
8. Program using SDI and MDI serialization
9. Program to create dynamic link libraries using MFC
10. Program to interface with database

EL 2431 COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT

L T P C
2 0 2 3

Goal

The goal of the programme is to provide the learners with the methods and materials required for becoming accomplished personalities through the medium of English.

Objectives

The course should enable the students to:

1. Be aware of self-knowledge by exposure to soft skills, values, behaviour, attitudes, temperamental changes, and a positive attitude to life.
2. Learn personality traits and undergo personality tests to determine their own personality characteristics and the scope for improvement.
3. Cultivate the art of speaking fluently by making use of proper gestures, tone and voice modulation, adding humour to the speech.
4. Figure out the need to work in teams, adorn or accept team leadership, and make use of body language to enhance team spirit.
5. Be familiar with the art of managing self, people, work and time, keeping in mind problems like time-wasters and stress-builders.

Outcome

The student should be able to:

1. Apply the knowledge gained to improve upon their values, behaviour, attitude, and develop the soft skills required for home, workplace and the society.
2. Employ the concept of personality traits and build up an accomplished personality that would be pleasing to people around so as to influence them positively.
3. Develop a personal style and communicate fearlessly and effectively in a convincing manner so as to impress listeners or the audience.
4. Participate in presentations, group discussions, debates and mock interviews making good use of language skills and interpersonal relationships.
5. Comprehend stress-management tips to overcome stress-prone habits and develop a career plan with personal, familial and societal goals for success.

UNIT I**12**

Values and attitudes - Value-formation - Values & education - Terminal & Instrumental values - Civic responsibilities - The power of Personal/ Cultural/ Social values -- Behaviour and attitudes -- Features of attitudes - Developing positive attitude - Overcoming negative attitude -- People skills - Soft skills as per the Work Force Profile - The four temperaments - Sanguine - Choleric - Melancholic - Phlegmatic -- Tests for Personal Chemistry.

UNIT II**12**

What is personality development? - Types of personalities as per (i) Heredity (ii) Environment (iii) Situation - the 16 personality factors - MBTI Tests - Personality types - Increasing self awareness: Assessing one's locus of control, Machiavellianism, self-esteem, self-monitoring, risk-taking, Type A, Type B personality elements - Intellectual and physical abilities for jobs -- Personality tests.

UNIT III**12**

Developing the art of speaking - How to get rid of stage fright? - Enhancing fluency? - Modulating voice - Enunciation - Positive and negative gestures - Preparation - How to begin? - How to convince the listeners? - How to wind up the speech? - Adding humour and illustration - Developing one's own style - Types of style - How to influence the audience? - How to become an effective speaker? -- Tests for effective speaking.

UNIT IV**12**

Team work - Team building - Team leadership -- How to face an interview? -- How to participate in a group discussion? - How to argue for or against in a debate? - Body language - Non-verbal communication - Personal appearance - Facial expression - Posture - Gestures - eye contact - Etiquette - Voluntary and involuntary body language - Gender implications -- Tests.

UNIT V**12**

Managing self, people, work, situations - Time-management - Secrets of time-management - Time-wasters - Stress -- Kinds of stress - Spotting stress - Stress-builders - Stress -management tips - Stress-prone habits -- Goals - Career planning - Interpersonal interaction - Interpersonal relationships -- Tests.

TEXT BOOKS:

1. Burlington, V.T. Group Interaction in High Risk Environments. Ashgate Publication, 2004.
2. Fisher, Kimball. Leading Self-directed Work Teams: A Guide to Developing New Team Leadership Skills. New York, NY: McGraw Hill, 2000.

REFERENCES:

1. Ted W. Engstrom and R. Alec Mackenzie. Managing Your Time: Practical Guidelines on the Effective Use of Time. 2008.
2. Burnard, Philip. Training Games for Interpersonal Skills. McGraw Hill, Inc., New York, 1992. Greenwich, Carolyn. The Fun Factor, McGraw Hill, Inc., New York, 1997.

SEMESTER -V

PCA501 SERVICE ORIENTED ARCHITECTURE

L T P C
3 0 0 3

Goal

To Learn about Service Oriented Architecture.

Objectives

The course should enable the students:

- To learn about SOA architecture and its components
- To know about Service oriented Analysis and design
- Learn about SOA implementation and governance
- Learn about SOA in mobile and research issues
- Learn about Meta data management and security in web service frame work.

Outcome

The student should be able to understand:

- About SOA architecture and its components
- About Service oriented Analysis and design
- About SOA implementation and governance
- About SOA in mobile and research issues
- About Meta data management and security in web service frame work.

UNIT I ARCHITECTURE

9

Software Architecture - Types of IT Architecture - SOA - Evolution - Key components - erspective of SOA - Enterprise-wide SOA - Architecture - Enterprise Applications - Solution Architecture for enterprise application - Software platforms for enterprise Applications - atterns for SOA - SOA programming models

UNIT II ANALYSIS AND DESIGN

9

Service-oriented Analysis and Design - Design of Activity, Data, Client and business process services - Technologies of SOA - SOAP - WSDL - JAX - WS - XML WS for .NET - Service integration with ESB - Scenario - Business case for SOA - stakeholder objectives - benefits of SPA - Cost Savings

UNIT III IMPLEMENTATION

9

SOA implementation and Governance - strategy - SOA development - SOA governance - trends in SOA - event-driven architecture - software s a service - SOA technologies - proof-of-concept - process orchestration - SOA best practices

UNIT IV DATA MANAGEMENT**9**

Meta data management - XML security - XML signature - XML Encryption - SAML - XACML - XKMS - WS-Security - Security in web service framework - advanced messaging

UNIT V TRANSACTION PROCESSING**9**

Transaction processing - paradigm - protocols and coordination - transaction specifications - SOA in mobile - research issues.

Total No of Periods:45**TEXT BOOKS:**

1. Shankar Kambhampaly, "Service -Oriented Architecture for Enterprise Applications", Wiley India Pvt Ltd, 2008.
2. Eric Newcomer, Greg Lomow, "Understanding SOA with Web Services", Pearson Education.

REFERENCE:

1. Mark O' Neill, et al. , "Web Services Security", Tata McGraw-Hill Edition, 2

PCA502 XML AND WEB SERVICES LAB

L	T	P	C
0	0	3	1

Goal

To provide web services architecture designed for highly dynamic program-to-program interactions with grid systems, and peer-to-peer environments and to build autonomous distributed applications.

Objectives

The course should enable the students to:

- Create an XML document for storing information about books using DTD and XML schema
- Create an XML document for presenting the information using CSS.
- Write an XSLT programme for extracting the information from the XML document
- Write a programme using microsoft DOM to navigate and extract information from the XML document.
- Create a Web service for various applications and using microsoft DSO to connect HTML form to XML document and display the information.

Outcome

The student should be able to understand:

- The creation of XML document for storing information about books using DTD and XML schema.
- The creation of XML document for presenting the information using CSS.
- The creation of XSLT programme for extracting the information from the XML document

- The creation of programme using microsoft DOM to navigate and extract information from the XML document.
- In creating a Web service for various applications and using microsoft DSO to connect HTML form to XML document and display the information.

List of Experiments

1. Create an XML document to store an address book.
2. Create an XML document to store information about books and create the DTD files.
3. Create an XML schema for the book's XML document from exercise 2.
4. Create an XML document to store resumes for a job web site and create the DTD file
5. Present the book's XML document using cascading style sheets (CSS).
6. Write an XSLT program to extract book titles, authors, publications, book rating from the book's XML document and use formatting.
7. Use Microsoft DOM to navigate and extract information from the book's XML document.
8. Use Microsoft DSO to connect HTML form or VB form to the book's XML document and display the information.
9. Create a web service for temperature conversion with appropriate client program.
10. Create a web service for currency conversion (at five currencies) with appropriate client program.

PCA503 SOFTWARE DEVELOPMENT LAB

L T P C
0 0 3 1

Goal

To be able to develop software using CASE tools for the applications.

Objective

- Learn the nuances of developing customized software for several applications like online railway reservation system, payroll processing, banking process etc.

Outcome

- Develop robust tailor made software for various real world business applications.

Develop Software for the following applications:

1. Online railway reservation system
2. Payroll processing application
3. Inventory system
4. Automating the banking process
5. Software for game

6. Library management system
7. Create a dictionary
8. Text editor
9. Telephone directory
10. Create an E-Book of your choice

Software required:

Languages: C/C++/Java/JSDK/Web browser.

Any front end tool (like VB, VC++, Developer 2000) etc

Any backend tool (Oracle, Ms-Access, SQL) etc.

Any CASE tool.

ELECTIVE COURSES
PCA701 TCP/IP PROTOCOL SUITE

L T P C
3 0 0 3

Goal

To establish high end communication between the online entities using Internet Protocol, Transmission Control Protocol and Application Protocol.

Objectives

The course should enable the students:

- To learn about OSI model .
- To learn about Internet protocol, Internet control message protocol
- To learn about internet group management protocol
- To lean about Transmission control protocol
- To learn about Application protocol and client server model.

Outcome:

The student would be able to understand:

- About the architecture of OSI model .
- About Internet protocol, Internet control message protocol
- About internet group management protocol
- About Transmission control protocol
- About Application protocol and client server model.

UNIT I INTRODUCTION 10

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 10

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 8

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 8

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

9

File Transfer Protocol - Connections - Communication - Simple Mail Transfer Protocol - Simple Network Management Protocol - Hyper Text Transfer Protocol - Transaction - Request and Response messages.

Total No. of periods : 45

TEXT BOOK:

1. Behrouz A. Forouzan, "TCP/IP Protocol Suite", Tata McGraw Hill Edition, 2000.

REFERENCE:

1. Douglas E. Comer, David L. Stevens, "Internetworking with TCP/IP - Volume I, II and III", 2nd Edition, Prentice-Hall of India Pvt. Ltd., 1994.

PCA702 MANAGEMENT INFORMATION SYSTEMS

L T P C
3 0 0 3

Goal

To learn about the organizational structure and the MIS structure based on management activity.

Objectives

The course should enable the students:

- To learn about different types of Systems
- To learn about organizational structure and culture
- To learn about MIS based management activity
- To learn about file organization and database organization
- To learn about various life cycle models for project development and project management.

Outcome

The student should be able to understand:

- About different types of Systems
- About organizational structure and culture
- About MIS based management activity
- About file organization and database organization
- About various life cycle models for project development and project management.

UNIT I SYSTEM CONCEPTS

7

Definition - Computer based user machine system - Integrated system - Need for a database - Utilization of models - Evolution - Subsystems - Organizational subsystems - Activities subsystems.

UNIT II ORGANIZATIONAL STRUCTURE 9

Basic model - Hierarchical - Specialization - Formalization - Centralization - Modifications of basic organizational structure - Project organization - Lateral relations - Matrix organization - Organizational culture and power organizational change

UNIT III STRUCTURE OF MIS 10

Operating elements - Physical components - Processing functions - Outputs - MIS support for decision making - Structured programmable decisions - Unstructured non-programmable decisions - MIS structure based on management activity and organizational functions - Synthesis of MIS structure

UNIT IV SYSTEM SUPPORT 10

Data representation - Communication network - Distributed systems - Logical data concepts - Physical storage devices - File organizations - Data base organization - Transaction processing

UNIT V DEVELOPMENT AND MANAGEMENT 9

A contingency approach to choosing an application - Developing strategy - Lifecycle definition stage - Lifecycle development stage - Lifecycle installation and operation stage - Project management.

Total No. of periods: 45

TEXT BOOKS:

1. Gordon B. Davis, Margrethe H. Olson, "Management Information Systems: Conceptual Foundations, Structure and Development" - 2nd Edition - Tata McGraw Hill International Book Company, 2000.
2. Dr.S.Shajahan and Mrs. R.Priyadharshni, "Management Information System", 2001.

REFERENCES:

1. E.Wainright Martin, Carol V. Brown, Danial W. DeHayes, Jeffrey A. Hoffer, William C. Perkins, "Managing Information Technology", 3rd Edition, Prentice Hall International edition 2004.
2. Harold Koontz, Heinz Weihrich, "Essentials of Management", 7th Edition, Tata McGraw Hill 2000.

PCA703 DISTRIBUTED COMPUTING

**L T P C
3 0 0 3**

Goal

To learn about the Distributed Processing Systems Design, Client/Server Network Model and Distributed databases.

Objectives

The course should enable the students:

- To learn about characterization of distributed systems and networking principles
- To learn about interprocess communication and distributed objects

- To learn about cryptographic algorithms
- To learn about DNS and distributed debugging
- To learn distributed Transaction processing.

Outcome

The student should be able to understand:

- About characterization of distributed systems and networking principles
- About interprocess communication and distributed objects
- About cryptographic algorithms
- About DNS and distributed debugging
- About distributed Transaction processing.

UNIT I INTRODUCTION 9

Characterization of Distributed Systems - Examples - Resource Sharing and the Web - Challenges - System Models - Architectural and Fundamental Models - Networking and Internetworking - Types of Networks - Network Principles - Internet Protocols - Case Studies.

UNIT II PROCESSES AND DISTRIBUTED OBJECTS 9

Interprocess Communication - The API for the Internet Protocols - External Data Representation and Marshalling - Client-Server Communication - Group Communication - Case Study - Distributed Objects and Remote Invocation - Communication Between Distributed Objects - Remote Procedure Call - Events and Notifications - Java RMI - Case Study.

UNIT III OPERATING SYSTEM ISSUES - I 9

The OS Layer - Protection - Processes and Threads - Communication and Invocation - OS Architecture - Security - Overview - Cryptographic Algorithms - Digital Signatures - Cryptography Pragmatics - Case Studies - Distributed File Systems - File Service Architecture - Sun Network File System - The Andrew File System

UNIT IV OPERATING SYSTEM ISSUES - II 9

Name Services -Domain Name System - Directory and Discovery Services - Global Name Service - X.500 Directory Service - Clocks, Events and Process States - Synchronizing Physical Clocks - Logical Time And Logical Clocks - Global States - Distributed Debugging - Distributed Mutual Exclusion - Elections - Multicast Communication Related Problems.

UNIT V DISTRIBUTED TRANSACTION PROCESSING 9

Transactions - Nested Transactions - Locks - Optimistic Concurrency Control - Timestamp Ordering - Comparison - Flat and Nested Distributed Transactions - Atomic Commit Protocols - Concurrency Control in Distributed Transactions - Distributed Deadlocks - Transaction Recovery - Overview of Replication and Distributed Multimedia Systems.

Total No. of periods : 45

TEXT BOOKS:

1. George Coulouris, Jean Dollimore and Tim Kindberg, "Distributed Systems Concepts and Design", 3rd Edition, Pearson Education, 2002.
2. M.L.Liu, "Distributed Computing Principles and Applications", Pearson Education, 2004.

REFERENCES:

1. Sape Mullender, "Distributed Systems", Addison Wesley, 2nd Edition, 1993.
2. Albert Fleishman, "Distributed Systems- Software Design and Implementation", Springer-Verlag, 1994
- 3.. Andrew S Tanenbaum , Maartenvan Steen, "Distributed Systems - Principles and Paradigms", Pearson Education, 2002
4. Mugesh Singhal,Niranjan G Shivaratri, "Advanced Concepts in Operating Systems", Tata McGraw Hill Edition, 2001.

PCA704 MOBILE COMPUTING

L T P C
3 0 0 3

Goal

To study about the concept of wireless mobile computing.

Objectives

The course should enable the students:

- To learn about various Medium Access control mechanisms
- To learn about various cellular networks and satellite
- To learn about Wireless networks
- To learn about Mobile IP and Mobile network layer
- To learn about wireless application protocol.

Outcome

The student should be able to:

- Understand about various medium access control mechanisms
- Understand about various cellular networks
- Understand about wireless networks
- Understand about mobile network layer
- Understand about wireless application protocol.

UNIT I INTRODUCTION 9

Medium Access Control : Motivation for Specialized MAC- SDMA- FDMA- TDMA- CDMA- Comparison of Access mechanisms - Tele communications : GSM- DECT- TETRA - UMTS- IMT-200 - Satellite Systems: Basics- Routing- Localization- Handover- Broadcast Systems: Overview - Cyclic Repetition of Data- Digital Audio Broadcasting - Digital Video Broadcasting.

UNIT II WIRELESS NETWORKS 9

Wireless LAN: Infrared Vs Radio Transmission - Infrastructure Networks- Ad hoc Networks- IEEE 802.11 - HIPERLAN - Bluetooth- Wireless ATM: Working Group- Services- Reference Model - Functions - Radio Access Layer - Handover- Location Management- Addressing Mobile Quality of Service- Access Point Control Protocol

UNIT III MOBILE NETWORK LAYER 9

Mobile IP : Goals - Assumptions and Requirement - Entities - IP packet Delivery- Agent Advertisement and Discovery - Registration - Tunneling and Encapsulation - Optimization - Reverse Tunneling - IPv6 - DHCP- Ad hoc Networks

UNIT IV MOBILE TRANSPORT LAYER 9

Traditional TCP- Indirect TCP- Snooping TCP- Mobile TCP- Fast retransmit/ Fast Recovery- Transmission/ Timeout Freezing - Selective Retransmission- Transaction Oriented TCP

UNIT V WAP 9

Architecture - Datagram Protocol- Transport Layer Security- Transaction Protocol- Session Protocol- Application Environment-Wireless Telephony Application.

Total No. of periods : 45

TEXT BOOKS:

1. J.Schiller, "Mobile Communication", Addison Wesley, 2000.
2. William Stallings, "Wireless Communication and Networks", Pearson Education, 2003.

REFERENCES:

1. William C.Y.Lee, "Mobile Communication Design Fundamentals", John Wiley, 1993.
2. Singhal, "WAP-Wireless Application Protocol", Pearson Education, 2003.

PMA112 NUMERICAL AND STATISTICAL METHODS

L T P C
3 0 0 3

Goal

To study about probability distributions and sampling distributions.

Objectives

The course should enable the students:

- To learn about Gauss elimination methods and Gauss Jordan methods
- To learn about interpolation methods
- To learn about ordinary differential equations and predictor and corrector methods
- To learn about Probability distributions
- To learn about sampling distributions.

Outcome

The student should be able to:

- Understand about gauss elimination methods And gauss Jordan methods
- Understand about interpolation methods
- Understand about ordinary differential equations and predictor and corrector method
- Understand about probability distributions.
- Understand about sampling distributions.

UNIT I LINEAR SYSTEM OF EQUATIONS 9

Solution of Systems of equations - Solution of Simultaneous linear equations - Gauss elimination methods - Gauss Jordan methods, Jacobi and Gauss Seidal iterative methods

UNIT II NUMERICAL DIFFERENTIATION AND INTEGRATION 9

Interpolation, Differentiation and integration - difference table - Newton's forward and backward interpolation - Lagrangian interpolation -Differentiation formulae- Trapezoidal and Simpson rule Gaussian - Quadrature

UNIT III DIFFERENTIAL EQUATIONS 9

Ordinary Differential equations-Taylor Series and Euler methods, Runge- Kutta methods - Predictor-corrector method - Milne and Adam - Bashforth methods - Error Analysis

UNIT IV PROBABILITY DISTRIBUTIONS 9

Probability axioms- Bayes Theorem- Discrete random variables and Continuous random variables - Density & Distribution functions - Joint and marginal distributions - Conditional distributions - Characteristic function- moment generating function- expectation.

UNIT V SAMPLING DISTRIBUTIONS

9

Small sample, t-test, F-test, Z-test, ANOVA one way classification and two way classification.

Total No. of periods: 45

TEXT BOOKS:

1. Grewal B.S, "Numerical Methods in Engineering and Science", Khanna Publishers,1999. (Unit 1,2 & 3)
2. John E.Freund, Irwin Miller, Marylees Miller, "Mathematical Statistics with Applications", Seventh Edition, Prentice Hall of India, 2004. (Unit 4 & 5)

REFERENCES:

1. A.M.Natarajan & A.Tamilarasi, "Probability Random Processes and Queuing theory",New Age International Publishers, 2nd Edition, 2005.
2. S.K.Gupta, "Numerical Methods for Engineers", New age International Publishers,2000.

PCA705 ADVANCED DATABASES

L T P C
3 0 0 3

Goal

To learn the advanced database techniques and the concepts of Enhanced Data Models.

Objectives

The course should enable the students:

- To learn about Relational model and query processing
- To learn about object oriented databases
- To learn about client server modeling and data warehouse and data mining
- To learn about issues in data designing
- To learn about deductive databases.

Outcome

The student should be able to understand:

- About Relational model and query processing
- About object oriented databases
- About client server modeling and data warehouse and data mining
- About issues in data designing
- About deductive databases.

UNIT I	RELATIONAL DATABASES	9
Relational Model - Querying - Storage Structures - Query Processing - Normalization.		
UNIT II	OBJECT ORIENTED DATABASES	9
Introduction to Object Oriented Data Bases - Approaches - Modeling and Design - Persistence - Transaction - Concurrency - Recovery - Database Administration.		
UNIT III	EMERGING SYSTEMS	9
Enhanced Data Models - Client/Server Model - Data Warehousing and Data Mining - Web Databases - Mobile Databases.		
UNIT IV	CURRENT ISSUES	9
Rules - Knowledge Bases - Active and Deductive Databases - Distributed Databases and Parallel databases.		
UNIT V	DATABASE DESIGN ISSUES	9
Security - Integrity - Consistency - Database Tuning - Optimization and Research Issues.		

Total No. of periods : 45

TEXT BOOK:

1. R. Elmasri and S.B. Navathe, "Fundamentals of Database Systems", Addison Wesley, 2000.

REFERENCES:

1. Gary W. Hanson and James V. Hanson, "Database Management and Design", Prentice Hall of India Pvt Ltd, 1999.
2. Alex Benson, Stephen Smith and Kurt Thearling, "Building Data Mining Applications for CRM", Tata McGraw-Hill, 2000.

PMA113 RESOURCE MANAGEMENT TECHNIQUES

L T P C
3 0 0 3

Goal

To understand the fundamentals of resource management techniques.

Objectives

This course should enable the students:

- To learn about linear programming models
- To learn about Transportation and Assignment problem
- To learn about Internet Programming methods
- To learn about Scheduling
- To learn about queuing techniques.

Outcome

The student should be able to understand:

- About linear programming models
- About Transportation and Assignment problem
- About Internet Programming methods
- About Scheduling
- About queuing techniques.

UNIT I LINEAR PROGRAMMING MODELS 9

Mathematical Formulation - Graphical Solution of linear programming models - Simplex method - Artificial variable Techniques- Variants of Simplex method

UNIT II TRANSPORTATION AND ASSIGNMENT MODELS 9

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 9

Formulation - Gomory's IPP method - Gomory's mixed integer method - Branch and bound technique.

UNIT IV SCHEDULING BY PERT AND CPM 9

Network Construction - Critical Path Method - Project Evaluation and Review Technique - Resource Analysis in Network Scheduling.

UNIT V QUEUING MODELS 9

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.

Total No. of Periods : 45

TEXT BOOK:

1. Taha H.A., "Operations Research : An Introduction", 7th Edition, Pearson Education, 2004.

REFERENCES:

1. A.M.Natarajan, P.Balasubramani, A.Tamilarasi, "Operations Research", Pearson Education, Asia, 2005.
2. Prem Kumar Gupta, D.S. Hira, "Operations Research", S.Chand & Company Ltd, New Delhi, 3rd Edition , 2003.

PCA706 WEB GRAPHICS

L T P C
3 0 0 3

Goal

To learn the nuances involved in Web Designing approach.

Objectives

The course should enable the students:

- To learn the HTML, Web Design
- To learn the Photoshop
- To learn to handle the Images
- To learn about Multimedia
- To learn the applications of Multimedia.

Outcome

The student should be able to:

- Understand the web design concepts
- Understand the Photoshop tools
- Understand the designing of icons, gradients etc.,
- Understand the Multimedia tools
- Understand the applications of Multimedia.

UNIT I INTRODUCTION 9

HTML coding - Basic web graphics - Web page design and site building - Image maps - Adding multimedia to the web.

UNIT II PAINT SHOP PRO/PHOTOSHOP 9

Introduction - Image Basics - File Formats - GIF - JPEG - Color Palette - Layers - Creating new Images - Brushes - Grids - Scaling Images - Moving and Merging Layers - Tool Palette - Screen capturing - Grey styling - Using style Palette - Animation.

UNIT III IMAGE HANDLING 9

Scanning Images - Adding Text to the images - Designing icons - Creating background images - Color models - Color depths - Color calibration - Creating gradients - Oil paint effect.

UNIT IV MULTIMEDIA 9

Creating clippings - Animations with sound effects - Adding audio or Video - Windows Media Player ActiveX Control - Agent control - Embedding VRML in a web page - Real Player ActiveX control.

UNIT V APPLICATIONS

9

Creating web site with a particular theme using all the utilities - Graphics - Animations and Interaction.

Total No. of periods : 45

TEXT BOOKS:

1. Richard Schrand, "Photoshop 6 Visual Jumpstart", Adobe Press, 2000. (Unit 1,2 & 3)
2. James L. Mohles, "Flash 5.0 Graphics, Animation & Interaction, Macromedia", 2000. (Unit 4 & 5).

REFERENCES:

1. "Internet and World Wide Web How to program" , Deitel - Prentice Hall, 2003
2. Robert Reinhardt, Jon Warren Lentz, "Flash 5 Bible", Hungry Minds Inc, 2001.

PCA707 NATURAL LANGUAGE PROCESSING

L T P C
3 0 0 3

Goal

To learn the principles & applications of Natural Language Processing.

Objectives

The course should enable the students:

- To learn about speech and language processing and Automata theory
- To learn about speech recognition architecture and speech synthesis
- To learn about Part of speech tagging ,noun phrase and verb phrase
- To learn about unification and parsing
- To learn about semantic analysis

Outcomes

The student should be able to understand:

- About speech and language processing and Automata theory
- About speech recognition architecture and speech synthesis
- About Part of speech tagging ,noun phrase and verb phrase
- About unification and parsing
- About semantic analysis

UNIT I INTRODUCTION

9

Speech and Language Processing - Ambiguity - Models and algorithms - Language - Thought - Understanding - Brief history - Regular Expressions - Automata - Morphology and Finite State Transducers - Computational Phonology and Text-to-Speech

UNIT II PROBABILISTIC MODELS AND SPEECH RECOGNITION **10**

Spelling - Bayesian method - Weighted Automata - N-grams - Smoothing - Entropy - HMMs and Speech Recognition - Speech Recognition Architecture - Hidden Markov models - Decoding - Acoustic processing - Speech recognizer - Speech synthesis

UNIT III SYNTAX **8**

Word classes and Part-of-Speech Tagging - Tagsets - Transformation based tagging - Context free rules and trees - The noun Phrase - Co-ordination - Verb phrase - Finite state and context free grammars - Parsing with context free grammars

UNIT IV UNIFICATION AND PROBABILISTIC PARSING **8**

Features - Implementing unification - Unification constraints - Probabilistic context free grammars - Problems - Lexicalized context free grammars - Dependency grammars - Human parsing - Language and Complexity

UNIT V SEMANTICS **10**

Representing meaning - First order predicate calculus - Semantic analysis - Attachments - Idioms - Compositionality - Robust semantic analysis - Lexical semantics - Selectional restrictions - Machine learning approaches - Dictionary based approaches - Information retrieval.

Total No. of periods : 45

TEXT BOOK:

1. Daniel Jurafsky and James H. Martin, "Speech and Language Processing", Pearson Education, 2002.

REFERENCES:

1. Michael W. Berry, "Survey of Text Mining: Clustering, Classification and Retrieval Systems", Springer Verililag, 2003.
2. James Allen, "Natural Language Understanding", Benjamin Cummings Publishing Co, 1995.

PCA708 DIGITAL IMAGING

L T P C
3 0 0 3

Goal

To introduce various image processing techniques to students.

Objectives

This course should enable the students:

- To study the image fundamentals and mathematical transforms necessary for image processing.
- To study the image enhancement techniques
- To study image restoration procedures.

- To study the image compression procedures.
- To study the image segmentation and representation techniques.

Outcome

The student should be able to:

- Describe, analyse and reason about how digital images are represented
- Understand how images are manipulated, encoded and processed
- Emphasize on algorithm design suitable for image processing
- Implement image processing algorithms
- Criticize the performance of algorithms

UNIT I DIGITAL IMAGE FUNDAMENTALS 9

Image formation, Image transforms - fourier transforms, Walsh, Hadamard, Discrete cosine, Hotelling transforms.

UNIT II IMAGE ENHANCEMENT & RESTORATION 9

Histogram modification techniques - Image smoothening - Image Sharpening - Image Restoration - Degradation Model - Noise models - Spatial filtering - Frequency domain filtering.

UNIT III IMAGE COMPRESSION & SEGMENTATION 9

Compression Models - Elements of information theory - Error free Compression -Image segmentation -Detection of discontinuities - Edge linking and boundary detection - Thresholding - Region based segmentation - Morphology.

UNIT IV REPRESENTATION AND DESCRIPTION 9

Representation schemes- Boundary descriptors- Regional descriptors - Relational Descriptors

UNIT V OBJECT RECOGNITION AND INTERPRETATION 9

Patterns and pattern classes - Decision-Theoretic methods - Structural methods.

Total No. of periods : 45

TEXT BOOKS:

1. Gonzalez.R.C & Woods. R.E., "Digital Image Processing", II Ed., Pearson Education,2002.
2. William.K.Fratt , "Digital Image Processing", 3rd Edition, John Willey, 2003.

REFERENCES:

1. Anil Jain.K, "Fundamentals of Digital Image Processing", Prentice Hall of India,2005.
2. Maker.A.Sid- Ahmed, "Image Processing", McGraw Hill, New York, 1994.

PCA709 ELECTRONIC COMMERCE

L T P C
3 0 0 3

Goal

To provide valued online customers with quick delivery of high quality electronic products and to employ the latest in internet e-business technology in transacting online business.

Objectives

The course should enable the students to:

- Introduce the fundamentals of conducting Online business transaction in a secure and efficient E-Commerce Framework.
- Ensure safe, secure and smart technologies to conduct online business activities.
- Understand various modes of electronic payment methods.
- Gain knowledge on electronic commerce providers.
- Provide insight on online commerce environment.

Outcome

The student should be able to:

- Understand the basics of conducting Online business transaction in a secure and efficient E-Commerce Framework.
- Appreciate the secure ways of conducting online business activities.
- Comprehend various modes of electronic payment methods.
- Acquire knowledge on various electronic commerce providers.
- Get information on online commerce environment.

UNIT I INTRODUCTION

6

Networks and Commercial Transactions - Internet and Other Novelties - Electronic Transactions Today - Commercial Transactions - Establishing Trust - Internet Environment - Internet Advantage - World Wide Web.

UNIT II SECURITY TECHNOLOGIES

9

Why Internet is Unsecure - Internet Security Holes - Cryptography : Objective - Codes and Ciphers - Breaking Encryption Schemes - Data Encryption Standard - Trusted Key Distribution and Verification - Cryptographic Applications - Encryption - Digital Signature - Nonrepudiation and Message Integrity.

UNIT III ELECTRONIC PAYMENT METHODS

9

Traditional Transactions : Updating - Offline and Online Transactions - Secure Web Servers - Required Facilities - Digital Currencies and Payment Systems - Protocols for the Public Transport - Security Protocols - SET - Credit Card Business Basics.

UNIT IV ELECTRONIC COMMERCE PROVIDERS**9**

Online Commerce Options - Functions and Features - Payment Systems : Electronic, Digital and Virtual Internet Payment System - Account Setup and Costs - Virtual Transaction Process - InfoHaus - Security Considerations - CyberCash: Model - Security - Customer Protection - Client Application - Selling through CyberCash.

UNIT V ONLINE COMMERCE ENVIRONMENTS**12**

Servers and Commercial Environments - Payment Methods - Server Market Orientation - Netscape Commerce Server - Microsoft Internet Servers - Digital Currencies - DigiCash - Using Ecash - Ecash Client Software and Implementation - Smart Cards - The Chip - Electronic Data Interchange - Internet Strategies, Techniques and Tools.

Total No. of periods : 45**TEXT BOOKS:**

1. Pete Loshin, "Electronic Commerce", 4th Edition, Firewall media, An imprint of Laxmi Publications Pvt. Ltd., New Delhi, 2004.
2. Ravi Kalakota , Andrew B.Winston, "E-Commerce" Pearson Education, 2004.

REFERENCES:

1. Jeffrey F.Rayport and Bernard J. Jaworski, "Introduction to E-Commerce", 2nd Edition, Tata Mc-Graw Hill Pvt., Ltd., 2003.
2. P.T. Joseph, "E-Commerce - A Managerial Perspective", PHI, 2003.
3. Greenstein, "Electronic Commerce", Tata Mc-Graw Hill Pvt., Ltd., 2000.

PCA710 SOFTWARE QUALITY MANAGEMENT**L T P C
3 0 0 3****Goal**

To make the students understand the principles of SQM and be able to judge the quality of software.

Objectives

The course should enable the students:

- To learn the nuances and techniques of assessing a software process and it's verification and validation.
- To learn software configuration management and establishing a strong baseline.
- To make the students acquire an insight on standards and inspections.
- To learn the modus operandi of testing and sustaining the software quality.
- To focus on defect prevention and detection techniques.

Outcome

The student should be able to:

- Understand the strategies for software process assessment.
- Understand the principles behind making software more change receptive.
- Implement and institutionalize a software standard and inspection.
- Comprehend various testing techniques for developing defect free quality software.
- Understand the defect prevention methods for developing quality software.

UNIT I INTRODUCTION 9

Software Process assessment overview - Assessment phases - Assessment principles - Assessment conduct - Implementation consideration - Quality management - Quality assurance plan - Considerations - Verification and Validation.

UNIT II CONFIGURATION MANAGEMENT 9

Need for configuration Management - Software product nomenclature - configuration management functions - Baselines - Responsibilities - Need for automated tools - plan - SCM support functions - The requirement phase Design control - The implementation phase - Test phase - SCM Tools - Configuration accounting and audit.

UNIT III SOFTWARE STANDARDS AND INSPECTION 9

Definitions - Reason for software standards - Benefits - Establishing standards - Guidelines - Types of reviews - Inspection of objectives - Basic inspection principles - The conduct of inspection - Inspection training.

UNIT IV TESTING AND MANAGING SOFTWARE QUALITY 9

Testing: principles - Types - Planning - Development - Execution and reporting - Tools and methods - Real Time testing - Quality management paradigm - Quality motivation - Measurement criteria - Establishing a software quality program - Estimating software quality.

UNIT V DEFECT PREVENTION 9

Principles of software defect prevention - Process changes for defect prevention - Defect prevention considerations - Managements role - Framework for software process change - Managing resistance to software process change - Case studies.

Total No. of periods: 45

TEXT BOOKS:

1. Watts S. Humphrey, "Managing the Software Process", Addison Wesley, 2001.
2. Tsum S.Chow, "Software Quality Assurance - A Practical Approach", IEEE Computer Society Press 2006.

REFERENCES:

1. Richard E. Fairley, "Software Engineering - A Practitioner's Approach", McGraw Hill 2006.
2. Roger. S. Pressman, "Software Engineering - A Practitioner's Approach", 2005.

PCA711 SOFTWARE PROJECT MANAGEMENT

L T P C
3 0 0 3

Goal

To provide the required knowledge in managing the software projects efficiently.

Objectives

The course should enable the students:

- To understand the process groups and knowledge areas of project management
- To understand the fundamental concepts necessary to manage a modern software project including techniques
- To understand tools used for project initiating, planning and control, status and review and completion.
- To understand and have insight into dealing with the critical trade-off issues relating to project-size, effort, schedule, productivity and quality
- To understand and have insight to plan for quality assurance.

Outcome

The student should be able to:

- Understand approaches for managing the software development process
- Understand efficient techniques for managing each phase of the system development life cycle
- Manage, estimate, cost, plan, schedule, measure, and review software projects
- Understand methods for evaluating and managing an organization portfolio of technology and infrastructure services
- Optimize the software development process based on the critical issues.

UNIT I INTRODUCTION

9

Introduction to Competencies - Product Development Techniques - Management Skills - Product Development Life Cycle - Software Development Process and models - The SEI CMM - International Organization for Standardization.

UNIT II DOMAIN PROCESSES

9

Managing Domain Processes - Project Selection Models - Project Portfolio Management - Financial Processes - Selecting a Project Team - Goal and Scope of the Software Project - Project Planning -

Creating the Work Breakdown Structure - Approaches to Building a WBS - Project Milestones - Work Packages - Building a WBS for Software.

UNIT III SOFTWARE DEVELOPMENT 9

Tasks and Activities - Software Size and Reuse Estimating - The SEI CMM - Problems and Risks - Cost Estimation - Effort Measures - COCOMO: A Regression Model - COCOMO II - SLIM: A Mathematical Model - Organizational Planning - Project Roles and Skills Needed.

UNIT IV SCHEDULING ACTIVITIES 9

Project Management Resource Activities - Organizational Form and Structure - Software Development Dependencies - Brainstorming - Scheduling Fundamentals - PERT and CPM - Leveling Resource Assignments - Map the Schedule to a Real Calendar - Critical Chain Scheduling.

UNIT V QUALITY ASSURANCE 9

Quality: Requirements - The SEI CMM - Guidelines - Challenges - Quality Function Deployment - Building the Software Quality Assurance - Plan - Software Configuration Management: Principles - Requirements - Planning and Organizing - Tools - Benefits - Legal Issues in Software - Case Study.

Total No. of Periods : 45

TEXT BOOKS:

- 1 Robert T.Futrell, Donald F. Shafer, Linda I. Safer, "Quality Software Project Management", Pearson Education, Asia, 2002.
2. Hughes, "Software Project Management, 3/E", Tata McGraw-Hill, 2004.

REFERENCES:

1. Pankaj Jalote, "Software Project Management in Practice", Addison Wesley, 2002.
2. S.A. Kelkar, "Software Project Management - A Concise Study", PHI, 2003.
3. Gobalswamy Ramesh, "Managing Global Software Projects", Tata McGraw Hill Publishing Company, 2003.

PAT705 SUPPLY CHAIN MANAGEMENT

**L T P C
3 0 0 3**

Goal

To learn about Supply Chain management, Inventory management and warehouse management.

Objectives

The course should enable the students:

- To learn about concept and components of SCM
- To learn about supply chain interface
- To learn about manufacturing and warehousing process

- To learn about logistic management in SCM
- To learn about IT in SCM.

Outcome

The student should be able to understand:

- About concept and components of SCM
- About supply chain interface
- About manufacturing and warehousing process
- About logistic management in SCM
- About IT in SCM

UNIT I BASIC CONCEPTS 9

Introduction to supply chain management (SCM) - concept of SCM - Components of SCM, an overview - features of SCM - strategic issues in SCM - Systems View - SCM current scenario - value chain management and customer relations management.

UNIT II INTERFACES WITH OTHER DISCIPLINES 10

Marketing and Supply Chain Interface - Customer focus in SCM - Demand planning Purchase planning - Make or Buy decision - Indigenous and global sourcing - Development and management of suppliers - legal aspects of buying - cost management - negotiating for purchasing/subcontracting - purchase insurance - evaluation of purchase performance (performance indices). Inventory management. - Finance and Supply Chain Interface. Financial impact of inventory.

UNIT III MANUFACTURING AND WAREHOUSING 9

Manufacturing scheduling - Manufacturing flow system - Work flow automation - Flexibility in manufacturing to achieve dynamic optimization. Material handling system design and decision. Warehousing and store keeping - strategies of warehousing and storekeeping - space management.

UNIT IV LOGISTICS MANAGEMENT 8

Logistics management - Role of logistics in SCM - Integrated Logistics management - transportation design and decision - multi modalism - third party logistics services and providers - facilities management (port/airport.ICD's) channels of distribution - logistics and customer service.

UNIT V INFORMATION TECHNOLOGY AND SCM 9

Information technology and SCM - EDI, ERP, Internet and Intranet, E-Commerce, Bar coding, Telecommunication Network, Advanced planning system, Decision support models for Supply Chain Management, Artificial Intelligence for SCM- Best practice in supply chain management - organizational issues to implement SCM.

Total No. of periods : 45

TEXT BOOK:

1. B.S.Sahay, "Supply Chain Management for Global Competitiveness", Macmillan India Limited, 2000.

REFERENCES:

1. Donald J.Bowersox & David J.Closs, "Logistical Management", Tata McGraw-Hill Editions, New Delhi, 2000.
2. David Simchi-Levi, "Designing and Managing the Supply Chain", Tata McGraw-Hill Editions, New Delhi, 2000.

PCA712 AGENT BASED INTELLIGENT SYSTEM

L T P C
3 0 0 3

Goal

Agent -based action should maximize the expected utility of the action and the task that have involved a great deal of research on perception, representation and learning.

Objectives

The course should enable the students to:

- Introduce the behaviour and characteristics of agents.
- Appreciate various knowledge representation and reasoning.
- Provide a roadmap for agent planning and deployment.
- Understand about agent’s receptiveness to uncertainty.
- Provide knowledge on higher level agents.

Outcome

The student should be able to:

- Understand about the behaviour and characteristics of agents.
- Understand and apply various knowledge representation and reasoning.
- Devise techniques for agent planning and deployment.
- Appreciate agent’s receptiveness to uncertainty.
- Gain knowledge on higher level agents and its associated behaviour.

UNIT I INTRODUCTION

9

Definitions - Foundations - History - Intelligent Agents-Problem Solving-Searching - Heuristics - Constraint Satisfaction Problems - Game playing.

UNIT II KNOWLEDGE REPRESENTATION AND REASONING

9

Logical Agents-First order logic-First Order Inference-Unification-Chaining- Resolution Strategies-Knowledge Representation-Objects-Actions-Events.

UNIT III PLANNING AGENTS**9**

Planning Problem-State Space Search-Partial Order Planning-Graphs-Nondeterministic Domains-Conditional Planning-Continuous Planning-MultiAgent Planning.

UNIT IV AGENTS AND UNCERTAINTY**9**

Acting under uncertainty - Probability Notation-Bayes Rule and use - Bayesian Networks-Other Approaches-Time and Uncertainty-Temporal Models- Utility Theory - Decision Network - Complex Decisions.

UNIT V HIGHER LEVEL AGENTS**9**

Knowledge in Learning-Relevance Information-Statistical Learning Methods-Reinforcement Learning-Communication-Formal Grammar-Augmented Grammars- Future of AI.

Total No. of periods: 45**TEXT BOOKS:**

1. Stuart Russell and Peter Norvig, "Artificial Intelligence - A Modern Approach", 2nd Edition, Prentice Hall, 2002.
2. Patrick Henry Winston, "Artificial Intelligence", 3rd Edition, AW, 2005.

REFERENCES:

1. Michael Wooldridge, "An Introduction to Multi Agent System", John Wiley, 2002.
2. Nils.J.Nilsson, "Principles of Artificial Intelligence", Elsevier Publications, 2007.

PCA713 SOFTWARE AGENTS**L T P C
3 0 0 3****Goal**

To provide knowledge on effective designing of Intelligent Agents.

Objectives

The course should enable the students:

- To learn the design and Architecture of agents
- To learn the Intelligent agents
- To learn about agent Communication and collaboration
- To learn about Architecture of Intelligent Agents
- To learn the Mobile agents.

Outcome

The student should be able to:

- Understand the Agent and design of agents
- Understand the Intelligent agents
- Understand the agent communication and collaboration
- Understand the Architecture of Intelligent agents
- Understand the Agent oriented programming for mobile agents

UNIT I AGENT AND USER EXPERIENCE 9

Interacting with Agents - Agent From Direct Manipulation to Delegation - Interface Agent Metaphor with Character - Designing Agents - Direct Manipulation versus Agent Path to Predictable.

UNIT II AGENTS FOR LEARNING IN INTELLIGENT ASSISTANCE 9

Agents for Information Sharing and Coordination - Agents that Reduce Work Information Overhead - Agents without Programming Language - Life like Computer character - S/W Agents for cooperative Learning - Architecture of Intelligent Agents.

UNIT III AGENT COMMUNICATION AND COLLABORATION 9

Overview of Agent Oriented Programming - Agent Communication Language - Agent Based Framework of Interoperability.

UNIT IV AGENT ARCHITECTURE 9

Agents for Information Gathering - Open Agent Architecture - Communicative Action for Artificial Agent.

UNIT V MOBILE AGENTS 9

Mobile Agent Paradigm - Mobile Agent Concepts - Mobile Agent Technology - Case Study: Tele Script, Agent Tel.

Total No. of periods: 45

TEXT BOOKS:

1. Jeffrey M. Bradshaw, "Software Agents", MIT Press, 2000. (Unit 1,2,3 & 4)
2. William R. Cockayne, Michael Zyda, "Mobile Agents", Prentice Hall, 1998. (5th Unit)

REFERENCES:

1. Russel & Norvig, "Artificial Intelligence: A Modern Approach", Prentice Hall, 2nd Edition, 2002.
2. Joseph P. Bigus & Jennifer Bigus, "Constructing Intelligent agents with Java: A Programmer's Guide to Smarter Applications", Wiley, 1997.

PCA714 UNIX INTERNALS

L T P C
3 0 0 3

Goal

To Learn shell programming & system programming in UNIX.

Objectives

The course should enable the students:

- To learn about Unix operating system
- To learn about File system
- To learn about Process states
- To learn about Memory Management Process
- To learn the shell programming and system programming in unix and Inter process communication.

Outcome

The student should be able to:

- Understand the unix operating systems
- Understand the File systems
- Understand the Process states
- Understand the Memory management Process
- Understand the shell programming and system programming in unix and inter process communication.

UNIT I INTRODUCTION TO UNIX

9

Unix operating system - History - System structure -Users Perspective- OS Services- Hardware-Architecture- System Concepts- Kernel data structures - System Administration - Buffer Cache- Heaters - Structure of the Buffer Pool- Scenarios-Reading and writing Disk Blocks.

UNIT II FILE SYSTEMS

9

INODES - Structure of a regular file- Directories - Conversion of a path name to an INODE - Super Block- INODE assignment - Disk Blocks- System calls for the file system.

UNIT III PROCESSES

9

Process States and Transitions - Layout of System Memory - Context of a Process - Manipulation of the process address space - Sleep - Process Control - Creation - Signals - Awaiting process termination - The Shell - System Boot and Init Process - Process Scheduling and Time - System calls for time - Clock.

UNIT IV MEMORY MANAGEMENT**9**

Swapping - Segmentation - Demand Paging - Driver Interfaces - Disk Drivers - Terminal Drivers - Streams.

UNIT V INTERPROCESS COMMUNICATION**9**

Process Tracing - System V IPC - Network Communications - Sockets - Problem of Multiprocessor Systems - Solution with Master and Slave Processors - Semaphores - Distributed Unix Systems - Satellite Processors - Newcastle connection - Transparent distributed file systems - System Calls.

Total No. of periods: 45**TEXT BOOK:**

1. Bach M.J., "The Design of the Unix Operating System", Prentice Hall India, 1986.

REFERENCES:

1. Goodheart B., Cox.J., "The Magic Garden Explained", Prentice Hall India, 1994.
2. Leffler S.J., Mckusick M.K., Karels M.J and Quarterman J.S., "The Design and Implementation of the 4.3 BSD Unix Operating System", Addison Wesley, 1998.

PCA715 ENTERPRISE RESOURCE PLANNING**L T P C
3 0 0 3****Goal**

To study about enterprise resource planning and various types of ERP packages.

Objectives

The course should enable the students:

- To learn about business models
- To learn about re-engineering concepts
- To learn about ERP implementation
- To learn about BAAN, IFS AVLON, MFG-PRO ERP packages
- To study about SAP.

Outcome

The student should be able to:

- Understand about various business models
- Understand about business re-engineering
- Understand about ERP implementation
- Understand about the SAP package and its architecture
- Understand the basic architectural concepts and system control interfaces.

UNIT I INTRODUCTION TO ERP**9**

Integrated Management Information Seamless Integration - Supply Chain Management - Integrated Data Model - Benefits of ERP - Business Engineering and ERP - Definition of Business Engineering - Principle of Business Engineering - Business Engineering with Information Technology.

UNIT II BUSINESS MODELLING FOR ERP**9**

Building the Business Model - ERP Implementation - An Overview - Role of Consultant, Vendors and Users, Customisation - Precautions - ERP Post Implementation Options-ERP Implementation Technology -Guidelines for ERP Implementation.

UNIT III ERP AND THE COMPETITIVE ADVANTAGE**9**

ERP domain MPGPRO - IFS/Avalon - Industrial and Financial Systems - Baan IV SAP-Market Dynamics and Dynamic Strategy.

UNIT IV COMMERCIAL ERP PACKAGE**9**

Description - Multi-Client Server Solution - Open Technology - User Interface- Application Integration.

UNIT V ARCHITECTURE**9**

Basic Architectural Concepts - The System Control Interfaces - Services - Presentation Interface - Database Interface.

Total No. of periods : 45**TEXT BOOK:**

1. Vinod Kumar Garg and N.K.Venkita Krishnan, "Enterprise Resource Planning - Concepts and Practice", PHI, 1998.

REFERENCE:

1. Jose Antonio Fernandz, "The SAP R/3 Handbook", TMH, 1998.

PBA302 ENTREPRENEURSHIP DEVELOPMENT**L T P C
3 0 0 3****Goal**

This course aims at making the students understand the scope of an entrepreneur, key areas of development, financial assistance by the institutions, methods of taxation and tax benefits, etc.

Objectives

The course should enable the students:

- To learn the factors influencing entrepreneurial growth.
- To give an insight on the motives influencing an entrepreneur.
- To learn the challenges involved in establishing a business enterprise.
- To analyze the prospect and well being of the business using break even analysis, Network analysis.
- To provide remedial measures for recovery of sick business units.

Outcome

The student should be able to:

- Understand the factors influencing entrepreneurial growth.
 - Understand the motives influencing an entrepreneur.
 - Interpret the challenges associated with business enterprise implementation.
- Appreciate the business analysis using failsafe techniques like break even analysis, Network analysis.
- Recommend the remedial measures for recovery of sick business units.

UNIT I ENTREPRENEURSHIP 9

Entrepreneur - Types of Entrepreneurs - Difference between Entrepreneur and Intrapreneur - Entrepreneurship in Economic Growth, Factors Affecting Entrepreneurial Growth.

UNIT II MOTIVATION 9

Major Motives Influencing an Entrepreneur - Achievement Motivation Training, self Rating, Business Game, Thematic Apperception Test - Stress management, Entrepreneurship Development Programs - Need, Objectives.

UNIT III BUSINESS 9

Small Enterprises - Definition, Classification - Characteristics, Ownership Structures - Project Formulation - Steps involved in setting up a Business - identifying, selecting a Good Business opportunity, Market Survey and Research, Techno Economic Feasibility Assessment - Preparation of Preliminary Project Reports - Project Appraisal - Sources of Information - Classification of Needs and Agencies.

UNIT IV FINANCING AND ACCOUNTING 9

Need - Sources of Finance, Term Loans, Capital Structure, Financial Institution, management of working Capital, Costing, Break Even Analysis, Network Analysis Techniques of PERT/CPM - Taxation - Income Tax, Excise Duty - Sales Tax.

UNIT V SUPPORT TO ENTREPRENEURS 9

Sickness in small Business - Concept, Magnitude, causes and consequences, Corrective Measures - Government Policy for Small Scale Enterprises - Growth Strategies in small industry - Expansion, Diversification, Joint Venture, Merger and Sub Contracting.

Total No. of periods : 45

TEXT BOOKS:

1. S.S.Khanka, "Entrepreneurial Development", S.Chand & Co. Ltd. Ram Nagar New Delhi, 1999.
2. Hisrich R D and Peters M P, "Entrepreneurship" 5th Edition Tata McGraw-Hill, 2002.

REFERENCES:

1. Rabindra N. Kanungo, "Entrepreneurship and innovation", Sage Publications, New Delhi, 1998.
2. EDII " Faculty and External Experts - A Hand Book for New Entrepreneurs Publishers: Entrepreneurship Development", Institute of India, Ahmedabad, 1986.

PCA716 SYSTEM ANALYSIS AND DESIGN

L T P C
3 0 0 3

Goal

The aim of this course is to gain an understanding of the principles of system analysis & design and equip them with the skills to analyze business requirements and design solutions to meet business needs.

Objectives

The course should enable the students to:

- Develop an understanding of the role of information systems in modern organizations.
- Become familiar with a variety of information systems analysis and problem solving tools and approaches.
- Gain practical experience with information systems analysis and design, working as part of a project team.
- Become familiar with report writing for project documentation
- Gain knowledge on quality assurance and testing information systems security.

Outcome

The student should be able to:

- Describe and model the concept of a system's identification and its boundaries with the outside world
- Describe and apply various structured analysis and design techniques
- Critically evaluate the modeling process by establishing consistency between the output of the different modeling techniques
- Write a comprehensive report and effective documentation
- Understand the steps involved in quality assurance and testing information systems.

UNIT I INTRODUCTION

9

System Concepts - Subsystems - Types of Systems - Systems and the System analyst - Business as a systems - Information systems - systems Lifecycle - Systems Development Stages - Role of system Analyst - Characteristics of System Analyst.

UNIT II SYSTEM PLANNING AND INVESTIGATION 9

Approaches to system Development - Methods of Investigation - Recording the investigation.

UNIT III SYSTEM DESIGN 9

Analyzing user requirements - Logical system Definition - Physical Definition - Physical Design of Computer subsystem - File Design - Database Design - Output and Input Design - Computer Procedure Design - system security. System implementation - Changeover - Maintenance and review.

UNIT IV PROJECT DOCUMENTATION 9

Communication skills - Problems in communication written reports - Principles of report writing with structure - Standard documentation -System Proposal - User system Specification - Program and Suit Specification - User Manual - Operational Manual - Test Data file - Changeover - Instructions - System audit report.

UNIT V INFORMATION SYSTEMS 9

Control in Information systems - Audit of Information systems - Testing of Information Systems - Security of Information systems. Quality Assurance: Reviews - walkthroughs and Inspections.

Total No. of Periods: 45

TEXT BOOKS:

1. Lee, "Introducing Systems Analysis and Design", Galgotia Booksource, Reprint 2003.
2. Igor Hawryszkiewicz, "Introduction to System Analysis And Design", PHI, New Delhi,2000.

REFERENCES:

1. V.Rajaraman, "Ana lysis and Design of Information Systems", PHI, New Delhi,2000.
2. James A Senn, "Analysis and Design of Information Systems", McGraw Hill.

PCA717 DATA WAREHOUSING AND DATA MINING

L T P C
3 0 0 3

Goal

To study about datawarehouse architecture and various datamining algorithms and techniques.

Objectives

The course should enable the students:

- To learn about Data Mining techniques.
- To learn about different steps in data Preprocessing
- To learn the different types of Association Mining algorithms, classification algorithms and clustering algorithms.
- To study about DB miner.
- To learn various applications of Data mining.

Outcome

The student should be able to:

- Know about the various data mining techniques, architecture and steps in datamining
- Know about data preprocessing
- Know about various types of association mining, classification and clustering algorithms
- Know about DB miner
- Know about various applications of datamining in various business units/sectors.

UNIT I INTRODUCTION 9

Relation To Statistics, Databases- Data Mining Functionalities-Steps In Data Mining Process- Architecture Of A Typical Data Mining Systems- Classification Of Data Mining Systems - Overview Of Data Mining Techniques.

UNIT II DATA PREPROCESSING AND ASSOCIATION RULES 9

Data Preprocessing-Data Cleaning, Integration, Transformation, Reduction, Discretization Concept Hierarchies-Concept Description: Data Generalization And Summarization Based Characterization- Mining Association Rules In Large Databases.

UNIT III PREDICTIVE MODELING 9

Classification And Prediction: Issues Regarding Classification And Prediction-Classification By Decision Tree Induction-Bayesian Classification-Other Classification Methods-Prediction-Clusters Analysis: Types Of Data In Cluster Analysis- Categorization Of Major Clustering Methods: Partitioning Methods -Hierarchical Methods

UNIT IV DATA WAREHOUSING 9

Data Warehousing Components -Multi Dimensional Data Model- Data Warehouse Architecture-Data Warehouse Implementation- -Mapping the Data Warehouse to Multiprocessor Architecture- OLAP.- Need- Categorization of OLAP Tools.

UNIT V APPLICATIONS 9

Applications of Data Mining-Social Impacts Of Data Mining-Tools-An Introduction To DB Miner-Case Studies-Mining WWW-Mining Text Database-Mining Spatial Databases.

Total No. of periods : 45

TEXT BOOKS:

1. Jiawei Han, Micheline Kamber, "Data Mining: Concepts and Techniques", Morgan Kaufmann Publishers, 2002.
2. Margaret H.Dunham, "Data Mining Introductory and Advanced Topics", Pearson Education, 2003.

REFERENCES:

1. Alex Berson, Stephen J. Smith, "Data Warehousing, Data Mining, & OLAP", Tata McGraw-Hill, 2004.
2. Ralph Kimball, "The Data Warehouse Life Cycle Toolkit", John Wiley & Sons Inc., 2007.

PCA718 XML AND WEB SERVICES

L T P C
3 0 0 3

Goal

The students should Understand the concepts of distributed services, XML and web services.

Objectives

The course should enable the students to:

- Comprehend the role of XML in Web services development and SOA.
- Evaluate the roles of XML, XSD, SOAP, WSDL, and UDDI in the architecture of Web services.
- Develop applications using the SOAP toolkit and .net.
- Write applications using private as well as public UDDI implementations.
- Create secured Web services using XML security framework, Digital signature and XKMS.

Outcome

The student should be able to:

- Understand the role of XML in web services development and SOA.
- Understand the roles XML, XSD, SOAP, WSDI and UDDI play in the architecture of Web services.
- Understand the development of applications using the SOAP toolkit and .net.
- Understand the application creation using private and public UDDI
- Understand the orchestration of secured web services using XML security framework, Digital Signature and XKMS.

UNIT I INTRODUCTION

9

Role Of XML - XML and the Web - XML Language Basics - SOAP - Web Services - Revolutions Of XML - Service Oriented Architecture (SOA).

UNIT II XML TECHNOLOGY

9

XML - Name Spaces - Structuring With Schemas and DTD - Presentation Techniques - Transformation - XML Infrastructure.

UNIT III SOAP 9

Overview of SOAP - HTTP - XML-RPC - SOAP: Protocol - Message Structure - Intermediaries - Actors - Design Patterns and Faults - SOAP With Attachments.

UNIT IV WEB SERVICES 9

Overview - Architecture - Key Technologies - UDDI - WSDL - ebXML - SOAP And Web Services In E-Com - Overview Of .NET and J2EE.

UNIT V XML SECURITY 9

Security Overview - Canonicalization - XML Security Framework - XML Encryption - XML Digital Signature - XKMS Structure - Guidelines For Signing XML Documents - XML In Practice.

Total No. of periods : 45

TEXT BOOKS:

1. Frank. P. Coyle, XML, "Web Services and The Data Revolution", Pearson Education, 2002.
2. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services", Pearson Education, 2004.

REFERENCES:

1. Ramesh Nagappan , Robert Skoczylas and Rima Patel Sriganesh, "Developing Java Web Services", Wiley Publishing Inc., 2004.
2. McGovern, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers,2005.

PCA719 CLIENT SERVER COMPUTING

**L T P C
3 0 0 3**

Goal

To learn about client server computing techniques.

Objectives

The course should enable the student:

- To learn about client server architecture and its applications and advantages
- To learn about DDE ,OLE and CORBA
- To learn about client server network connectivity and client server system development
- To learn about data storage in client server computing
- To learn about client server development training.

Outcome

The student should be able to understand about:

- Client server architecture and its applications and advantages

- DDE ,OLE and CORBA
- Client server network connectivity and client server system development
- Data storage in client server computing
- Client server development training.

UNIT I ARCHITECTURE

9

Client/Server Computing: DBMS concept and architecture, Single system image, Client Server architecture, mainframe - centric client server computing, downsizing and client server computing, preserving mainframe applications investment through porting, client server development tools, advantages of client server computing.

UNIT II APPLICATIONS

9

Components of Client/Server application: The client: services, request for services, RPC, windows services, fax, print services, remote boot services, other remote services, Utility Services & Other Services, Dynamic Data Exchange (DDE), Object Linking and Embedding (OLE), Common Object Request Broker Architecture (CORBA).

The server: Detailed server functionality, the network operating system, available platforms, the network operating system, available platform, the server operating system.

UNIT III NETWORK

9

Client/Server Network: connectivity, communication interface technology, Interposes communication, wide area network technologies, network topologies (Token Ring, Ethernet, FDDI, CDDI) network management, Client-server system development: Software, Client-Server System Hardware: Network Acquisition, PC-level processing unit, Macintosh, notebooks, pen, UNIX workstation, x-terminals, server hardware.

UNIT IV STORAGE

9

Data Storage: magnetic disk, magnetic tape, CD-ROM, WORM, Optical disk, mirrored disk, fault tolerance, RAID, RAID-Disk network interface cards. Network protection devices, Power Protection Devices, UPS, Surge protectors. Client Server Systems Development: Services and Support, system administration, Availability, Reliability, Serviceability, Software Distribution, Performance, Network management, Help Disk, Remote Systems Management Security, LAN and Network Management issues.

UNIT V DEVELOPMENT

9

Client/Server System Development: Training, Training advantages of GUI Application, System Administrator training, Database Administrator training, End-user training. The future of client server Computing Enabling Technologies, The transformational system.

Total No of Periods:45

TEXT BOOKS:

1. Patrick Smith & Steave Guengerich, "Client / Server Computing", PHI
2. Dawna Travis Dewire, "Client/Server Computing", TMH

REFERENCES:

1. Majumdar & Bhattacharya, "Database management System", TMH
2. Korth, Silberchatz, Sudarshan, "Database Concepts", McGraw Hill
3. Elmasri, Navathe, S.B, "Fundamentals of Data Base System", Addison Wesley.

PCA720 CYBER SECURITY

L	T	P	C
3	0	2	4

Goal

To facilitate the smooth, free and fair conduct of online business activities preempting the implications of cyber attackers.

Objectives

The course should enable the students:

- To educate them about security concepts and mechanisms for achieving it.
- To impart knowledge about network security, access control and Intrusion Detection.
- To give an insight on providing defense in depth application and system security.
- To enumerate the principles and policies for effective security management
- To learn about cyber defense techniques and cyber warriors.

Outcome

The student should be able to:

- Understand the basic security concepts and mechanisms for realizing it.
- Appreciate the robust techniques offering holistic network security, access control.
- Understand the knack and nuances of providing attack tolerant application and system security
- Understand and adopt the principles and policies for security management.
- Understand the modus operandi of cyber defense techniques and cyber warriors.

UNIT I SECURITY CONCEPTS AND MECHANISMS**9**

Networking Concepts Overview - Basics of Communication Systems - Wireless Networks - Internet - Information Security Concepts - Overview and services - Types of Attacks - Security Goal - E-commerce security - Security Threats and vulnerabilities -- Hacking Techniques - Password cracking

- Malicious code - Programming Bugs - Cryptography - Digital Signatures - PKI - Diffe-Hellman key exchange protocol - Applications.

UNIT II NETWORK SECURITY

9

Access Control and Intrusion Detection - Identification and Authorization techniques - Intrusion Detection System - Intrusion Prevention System - Intrusion Recovery System - Server Management and Firewalls - Security for VPN and Next Generation Networks - Security in Multimedia Networks - Link Encryption Devices.

UNIT III SYSTEM AND APPLICATION SECURITY

9

Security Architectures and Models - Designing Secure Operating Systems - Controls to enforce security services - Information flow model and Biba model - System Security - Web security - Web Authentication - Secure Socket Layer (SSL)- Secure Electronic Transaction (SET) - OS Security - OS Security Vulnerabilities, updates and patches - OS integrity checks - Anti-virus software - Design of secure OS and OS hardening - Configuring the OS for security - Trusted OS

UNIT IV SECURITY MANAGEMENT

9

Security Management Practices - security policies, procedures and guidelines - Risk Management - Business continuity Planning and Disaster Recovery Management - Risk Management - Change Management - Privilege Management - Security Laws and Standards - Security Assurance - Security Laws - Security Audit - International standards.

UNIT V CYBER DEFENSE TECHNIQUES

9

E-Mail Security - Web security - Web Injection Attack - Cross Site Scripting (XSS) - Secure Software Development - Cyber crime and cyber terrorism - Cyber operations and Defense Techniques- Phases of a cyber attack- Information warfare and surveillance - Steganography - Security Engineering - Computer Forensics - Legal Issues and Ethics- Case studies

Total No of Periods:45

TEXT BOOKS:

1. Ross J. Anderson. Security Engineering: A Guide to Building Dependable Distributed Systems. John Wiley, New York, NY, 2001. ISBN: 0471389226.
2. Matt Bishop. Computer Security: Art and Science. Addison Wesley, Boston, MA, 2003. ISBN: 0-201-44099-7.

REFERENCES:

1. Frank Stajano. Security for Ubiquitous Computing. John Wiley, 2002. ISBN:0470844930.
2. McClure, Stuart & Scambray, Joel, et al (2005). Hacking Exposed 5th Edition. McGraw-Hill Osborne Media.
3. Ortmeier, P. J. (2005). Security Management: An Introduction, 2nd edition, Prentice Hall.
4. Skoudis, Ed & Zeltser, Lenny (2004). Malware: Fighting Malicious Code. Second Ed. Prentice Hall PTR.

PCA721 PERL AND PYTHON PROGRAMMING

L T P C
3 0 0 3

Goal

To study about programming using python.

Objectives

The course should enable the students:

- To learn the fundamental concepts of Python
- To learn about strings, Lists, Functions & methods
- To learn the Python Scripts.
- To learn about Exception Handling mechanisms
- To learn the OOPs Technology.

Outcome

The student should be able to:

- Understand the Preliminary Concepts of Programming Language & syntax and Semantics methods
- Understand the Strings, Lists, Functions & methods
- Understand the Sub Python Scripts & able to write the Simple File Programs
- Understand the Exception handling mechanisms
- Understand the OOPs Concepts.

UNIT I INTRODUCTION

9

Python Introduction, History of Python, Python features, Python Installation, Python Environment Variables, Running Python, Simple Programs, Python Identifiers, Reserved words, Lines and Indentation, Multi line statements, Quotation in Python, Comments in Python, Command line arguments, Assigning values to the variables, Multiple assignment, Standard data types, Type Conversion, Operators in Python, Operators Precedence, Decision Making, Looping, Loop Control statement, Mathematical functions- Random number function, Trigonometric functions, Mathematical Constants.

UNIT II STRINGS & LISTS

9

Assigning values in strings, String manipulations, String special operators, String formatting operators, Triple Quotes, Raw String, Unicode String, Build-in-String methods, Lists- Introduction, Accessing values in list, List manipulations, List Operations, Indexing, slicing & matrices. Functions & Methods Built -in Functions and methods, Tuples- introduction, Accessing values, Tuple functions, Dictionary- Introduction, Accessing values, Functions, Timetuple functions, Calendartuple functions, time module functions, calendar module functions, and other module functions, user defined functions, Pass by value & pass by reference, function arguments & its types.

UNIT III PYTHON SCRIPTS**9**

Import statements, Locating modules, Namespace, dir(), global(), local(), reload(), Packages in python, I/O function, Opening and closing files, file object attribute, manipulations of the files, Directories in python, File and Directory related methods.

UNIT IV EXCEPTION HANDLING**9**

Exception, Handling Exception, example programs, try-finally, Argument of an Exception, Raising an Exception, User-defined exceptions.

UNIT V OOPS TERMINOLOGY**9**

OOPs Concepts -Class, class variable, Data member, Objects, methods, Instance, Function Overloading, Instance variable, Inheritance

Total No of Periods:45**TEXT BOOKS:**

1. Introduction to Python Programming, Povel Solin, Martin Novak,2012
2. Introduction to Python Programming, Jacob Fredslund, 2007

REFERENCE:

1. An Introduction to Python, John C. Lusth, 2011
2. Introduction to Python, DaveKuhlman, 2008.

PCA722 UNIX AND SHELL PROGRAMMING**L T P C
3 0 0 3****Goal**

To study about Unix operating systems.

Objectives

The course should enable the students:

- To state the major components and describe the architecture of the UNIX operating system.
- To learn the Shells, Pipes and Filters
- To learn the different types of Functions.
- To learn about C shell programming
- To learn the File Management.

Outcome

The student should be able to:

- Know about the Components or UNIX Commands
- Understand the Shells, Pipes, & filers

- Understand the applications of Functions & its types
- Implement the Shells using C language
- Understand File Management Concepts with Programs.

UNIT I INTRODUCTION

9

Introduction to Unix:- Architecture of Unix, Features of Unix , Unix Commands - PATH, man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip. Unix Utilities:- Introduction to unix file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin. Text processing utilities and backup utilities, detailed commands to be covered are tail, head , sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, cpio

UNIT II SHELLS

9

Unix Session, Standard Streams, Redirection, Pipes, Tee Command, Command Execution, Command-Line Editing, Quotes, Command Substitution, Job Control, Aliases, Variables, Predefined Variables, Options, Shell/Environment Customization. Filters : Filters and Pipes, Concatenating files, Display Beginning and End of files, Cut and Paste, Sorting, Translating Characters, Files with Duplicate Lines, Count characters, Words or Lines, Comparing Files.

UNIT III COMMANDS

9

Grep : Operation, grep Family, Searching for File Content. Sed : Scripts, Operation, Addresses, commands, Applications, grep and sed. awk: Execution, Fields and Records, Scripts, Operations, Patterns, Actions, Associative Arrays, String Functions, String Functions, Mathematical Functions, User - Defined Functions, Using System commands in awk, Applications, awk and grep, sed and awk.

UNIT IV C SHELL

9

Interactive C Shell : C shell features, Two Special Files, Variables, Output, Input, Exit Status of a Command, eval Command, Environmental Variables, On-Off Variables, Startup and Shutdown Scripts, Command History, Command Execution Scripts. Metacharacters and environment control structure, function commands, command execution. C Shell Programming :Basic Script concepts, Expressions, Decisions: Making Selections, Repetition, special Parameters and Variables, changing Positional Parameters, Argument Validation, Debugging Scripts, Script Examples.

UNIT V FILES

9

File Management : File Structures, System Calls for File Management - create, open, close, read, write, lseek, link, symlink, unlink, stat, fstat, lstat, chmod, chown, Directory API - opendir, readdir, closedir, mkdir, rmdir, umask.

Total No of Periods:45

TEXT BOOKS :

1. Behrouz A. Forouzan, Richard F. Gilberg.Thomson, Unix and shell Programming, Fourth edition, 2005
2. Sumitabha Das, TMH Your Unix the ultimate guide,. 2nd Edition.
3. Peter Dyson "Unix Complete Reference 1999, first edition

REFERENCES :

1. Unix for programmers and users, 3rd edition, Graham Glass, King Ables, Pearson Education.
2. Unix programming environment, Kernighan and Pike, PHI, Pearson Education
3. The Complete Reference Unix, Rosen, Host, Klee, Farber, Rosinski, Second Edition, TMH.

PCA723 HEALTH CARE INFORMATION SYSTEMS

L T P C
3 0 0 3

Goal

To study about design of health care system.

Objectives

The course should enable the students:

- To learn about health care regulation and laws
- To learn about evolution of health care
- To learn about the role of information technology in health care
- To learn about organizing and strategic planning of IT
- To study about accessing and achieving health care system.

Outcome

The student should be able to:

- Understand about health care regulation and laws
- Understand about evolution of health care
- Understand about IT in Healthcare
- Understand about organizing and strategic planning of IT
- Understand about accessing and achieving health care system

UNIT I INTRODUCTION

9

Introduction to health care information - Health care data quality - Health care information regulations, laws and standards.

UNIT II HEALTH CARE INFORMATION SYSTEMS

9

History and evolution of health care information systems - Current and emerging use of clinical information systems - system acquisition - System implementation and support.

UNIT III INFORMATION TECHNOLOGY

97

Information architecture and technologies that support health care information systems - Health care information system standards - Security of health care information systems.

UNIT IV MANAGEMENT OF IT CHALLENGES 9

Organizing information technology services - IT alignment and strategic planning - IT governance and management.

UNIT V IT INITIATIVES 9

Management's role in major IT initiatives - Assessing and achieving value in health care information systems.

Total No of Periods:45

TEXT BOOK:

1. Karen A Wager, Frances Wickham Lee, John P Glaser, " Managing Health Care Information Systems: A Practical Approach for Health Care Executives", Jossey- Bass/Wiley, 2005.

REFERENCE:

1. Rudi Van De Velde and Patrice Degoulet, "Clinical Information Systems: A Component based approach", Springer 2005.

PCA724 CLOUD COMPUTING

**L T P C
3 0 0 3**

Goal

To make the students understand the benefits of cloud computing and virtualization.

Objectives

The course should enable the students:

- To learn about history and architecture of cloud computing
- To learn about Cloud service development
- To learn about how cloud computing can be used in the community
- To learn about how cloud services can be used
- To learn about the ways to collaborate with the cloud.

Outcome

The student should be able to understand:

- About history and architecture of cloud computing
- About Cloud service development
- About the deployment of community based cloud computing

- About the usage of cloud services
- About the ways to collaborate with the cloud.

UNIT I UNDERSTANDING CLOUD COMPUTING 6

Cloud Computing - History of Cloud Computing - Cloud Architecture - Cloud Storage - Why Cloud Computing Matters - Advantages of Cloud Computing - Disadvantages of Cloud Computing - Companies in the Cloud Today - Cloud Services.

UNIT II DEVELOPING CLOUD SERVICES 10

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

UNIT III CLOUD COMPUTING FOR EVERYONE 10

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

UNIT IV CLOUD SERVICES 10

Collaborating on Calendars, Schedules and Task Management - Exploring Online Scheduling Applications - Exploring Online Planning and Task Management - Collaborating on Event Management - Collaborating on Contact Management - Collaborating on Project Management - Collaborating on Word Processing - Collaborating on Databases - Storing and Sharing Files.

UNIT V ONLINE COLLABORATION WITH CLOUD 9

Collaborating via Web-Based Communication Tools - Evaluating Web Mail Services - Evaluating Web Conference Tools - Collaborating via Social Networks and Groupware - Collaborating via Blogs and Wikis.

Total No of Periods:45

TEXT BOOKS:

1. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.
2. Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008

Goal

To study about artificial intelligence concepts.

Objectives

The course should enable the students:

- To learn about intelligent agents
- To learn about search strategies
- To learn about Knowledge engineering
- To learn about learning strategies
- To study about applications of Artificial intelligence.

Outcome

The student should be able to:

- Understand about various intelligent agents
- Understand about search strategies
- Understand about knowledge engineering
- Understand about various learning strategies
- Understand about applications of artificial intelligence.

UNIT I INTRODUCTION

8

Intelligent Agents - Agents and environments - Good behavior - The nature of environments - structure of agents - Problem Solving - problem solving agents - example problems - searching for solutions - uniformed search strategies - avoiding repeated states - searching with partial information.

UNIT II SEARCHING TECHNIQUES

10

Informed search strategies - heuristic function - local search algorithms and optimistic problems - local search in continuous spaces - online search agents and unknown environments - Constraint satisfaction problems (CSP) - Backtracking search and Local search - Structure of problems - Adversarial Search - Games - Optimal decisions in games - Alpha - Beta Pruning - imperfect real-time decision - games that include an element of chance.

UNIT III KNOWLEDGE REPRESENTATION

10

First order logic - syntax and semantics - Using first order logic - Knowledge engineering - Inference - propositional versus first order logic - unification and lifting - forward chaining - backward chaining - Resolution - Knowledge representation - Ontological Engineering - Categories and objects - Actions - Simulation and events - Mental events and mental objects.

UNIT IV LEARNING

9

Learning from observations - forms of learning - Inductive learning - Learning decision trees - Ensemble learning - Knowledge in learning - Logical formulation of learning - Explanation based learning - Learning using relevant information - Inductive logic programming - Statistical learning methods - Learning with complete data - Learning with hidden variable - EM algorithm - Instance based learning - Neural networks - Reinforcement learning - Passive reinforcement learning - Active reinforcement learning - Generalization in reinforcement learning.

UNIT V APPLICATIONS

8

Communication - Communication as action - Formal grammar for a fragment of English - Syntactic analysis - Augmented grammars - Semantic interpretation - Ambiguity and disambiguation - Discourse understanding - Grammar induction - Probabilistic language processing - Probabilistic language models - Information retrieval - Information Extraction - Machine translation.

Total No of Periods:45

TEXT BOOKS:

1. Stuart Russell, Peter Norvig, "Artificial Intelligence - A Modern Approach", Second Edition, Pearson Education / Prentice Hall of India, 2004.
2. Nils J. Nilsson, "Artificial Intelligence: A new Synthesis", Harcourt Asia Pvt. Ltd.,2000.

REFERENCES:

1. Elaine Rich and Kevin Knight, "Artificial Intelligence", Second Edition, Tata McGraw Hill, 2003.
2. George F. Luger, "Artificial Intelligence-Structures And Strategies For Complex Problem Solving", Pearson Education / PHI, 2002.

PCA726 MOBILE APPLICATION DEVELOPMENT

L T P C
3 0 0 3

Goal

To learn about mobile architecture and application development.

Objectives

The course should enable the students:

- To learn about network devices and operating systems and the Scope and importance of mobile
- To learn about mobile information architecture and to design the mobile application
- To learn to develop mobile application development
- To learn about the Andriod operating system
- To learn about application development using android platform.

Outcome

The student should be able to understand:

- About the functions and use of various network devices and operating systems and the Scope and importance of mobile
- About mobile information architecture and to design the mobile application
- About the methods and technology used in mobile application development
- About the Android operating system
- About the Application development using android.

UNIT I HISTORY OF MOBILE 9

The Evolution of Devices- the mobile ecosystem -Operators-Networks-Devices-Platforms-Operating Systems-Application Frameworks-Applications-Services-Size and Scope of the Mobile Market-The Addressable Mobile Market-Mobile As a Medium-The Eighth Mass Medium-Ubiquity Starts with the Mobile Web

UNIT II MOBILE DESIGN 9

Thinking in Context-Taking the Next Steps- Developing a Mobile Strategy -New Rules- Types of Mobile Applications-Mobile Application Medium Types- Mobile Information Architecture - Mobile Information Architecture-The Design myth-Interpreting Design-the mobile design tent-pole-designing for the best possible experience-the elements of mobile design-mobile design tools-designing for the right device-designing for different screen Sizes

UNIT III MOBILE APPLICATION DEVELOPMENT 9

Mobile web apps versus native applications-the ubiquity principle-when to make a native application-when to make a mobile web application-what is mobile 2.0?- mobile web development -web standards-designing for multiple mobile browsers-device plans-markup-css: cascading style sheets-javascript

UNIT IV INTRODUCTION TO ANDROID 9

Background.-an open platform for mobile development.-native android applications.-android sdk features.-introducing the open handset alliance.-what does android run on? -why develop for android?-introducing the development framework..

UNIT V APPLICATION DEVELOPMENT 9

Developing for android.-developing for mobile devices.-to-do list example. -android development tools.-what makes an android application? -Introducing the application manifest.-using the manifest editor-the android application life cycle.-understanding application priority and process states.-externalizing r-sources.-a closer look at android activities.

Total No. of periods: 45

TEXT BOOKS:

1. Mobile Design and Development Practical concepts and techniques for creating mobile sites and web apps By Brian Fling Publisher: O'Reilly Media(UNIT I,II,III)
2. Professional Android Application Development by Reto Meier (Unit-IV and Unit-V).

PCA727 PHP & MYSQL PROGRAMMINGs

L T P C
3 0 0 3

Goal

To introduce PHP & MySQL, one of the fastest growing technology combinations for developing interactive websites.

Objectives

The course should enable the students to:

- Learn PHP programming skills
- Learn to develop interactive web pages with PHP
- Understand object oriented programming with PHP
- Learn MySQL database skills to build the databases that will power their sites
- Integrate PHP and MySQL and build interactive powerful data driven web sites.

Outcome

The students should be able to:

- Design web pages using PHP
- Design SQL language withing MySQL and PHP to access and manipulate databases
- Create PHP code that utilizes the commonly used library functions built in to PHP
- Demonstrate use of cookie, session, and authentication programming in PHP
- Design and create a complete web site that demonstrates good PHP/MySQL client/ server design.

UNIT I INTRODUCTION TO PHP

9

Origin of PHP - PHP with web server - Benefits - Syntax - Delimiters- Variables - Datatypes - Operators - Dynamic variables - Strings - Flow Control - Arrays - Array operators.

UNIT II WRITING WEB PAGES WITH PHP

9

Web Protocols - HTML scripts and Form's element - Embedding PHP code into HTML - Retrieving and validating data - Redirecting web pages - Adding dynamic content - global Variable - String manipulation and regular expression - file handling.

UNIT III FUNCTIONS, COOKIES & SESSIONS IN PHP**9**

Functions - Using parameters and Returning Values - Call by value and call by reference - Using require() and include() - Session - Cookie - Using Cookies with Sessions - Deleting Cookies - Registering Session variables - Destroying the variables and Session.

UNIT IV OOPS in PHP**9**

Object Oriented Programming in PHP - Object oriented concepts - Classes, objects and operations - Abstract class - Inheritance - Using Final keyword - Exception Handling - User defined exception

UNIT V MYSQL DATABASE**9**

MySQL Architecture - Invoking MySQL through Command Line - MySQL Server Start and Stop - Defining a Database - Creating Tables and Fields in MySQL - Overview of Data Types in MySQL - Working with PHP-MySQL Environment - Using PhpMyAdmin (Web UI for DB access)

Total No of Periods:45**TEXT BOOK:**

1. Andrew B. Harris , "PHP 6/MySQL Programming for the Absolute Beginner", Course Technology PTR 1 edition, 2008.
2. Hugh E. Williams, David Lane, "Web Database Applications with PHP & MySQL", 2nd Edition

REFERENCES:

1. w3schools. Com
2. Luke Welling, Laura Thomson, "PHP and MySQL Web Development", Third Edition, 2004.