



HINDUSTAN UNIVERSITY

HINDUSTAN INSTITUTE OF TECHNOLOGY & SCIENCE

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

Padur, Kancheepuram District - 603 103.

**DEPARTMENT OF B.C.A
(Bachelor of Computer Applications)**

**CURRICULUM
&
SYLLABUS 2013-14**

**B.C.A
(Bachelor of Computer Applications)**

ACADEMIC REGULATIONS - BBA / BCA / B.Com
(Effective 2013)

1. Vision, Mission & Objectives

1.1 The Vision of the Institute is to make everyone a success and no one 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 strive

- 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 Aims and Objectives of the Institute are focused on

- Providing world class education in engineering, technology, applied science and management.
- Keeping pace with the ever changing technological scenario to help the students to gain proper direction to

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 BBA / BCA/B.Com programme will be decided by BOM as per the directives from 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. At the time of applying for admission, the candidates should have passed / appeared and be awaiting results of the final examination of the 10+2 system or its equivalent study in the appropriate subjects of study.

2.3. The selected candidates will be admitted to the BBA / BCA/ B.Com programme after he/she fulfills all the admission requirements set by the Institute after payment of the prescribed fees.

2.4. In all matters relating to admission to the BBA / BCA/ B.Com 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) A general programme of English, Tamil, other Languages and Applied Mathematics
- ii) A core programme introducing the student to the foundations of respective branch.
- iii) An elective programme enabling the student to opt and undergo a set of courses of interest to him/ her.
- iv) Professional practice including project, seminar and industrial training.
- v) General elective courses, such as, Environmental Studies, Physical Education, Professional ethics, and National Service Scheme.

The distribution of total credits required for the degree programme into the above five categories will nominally be 15%, 60%, 15%, 5% and 5% respectively.

3.2. The duration of the programme will be a minimum of 6 semesters. Every branch of the BBA / BCA/ B.Com programme will have a curriculum and syllabi for the courses approved by the Academic Council.

3.3 The academic programmes of the Institute follow the credit system. The general pattern is:

- 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 4 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
B.Com / BBA	135-145
BCA	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
90 -100	S	10
80 - 89	A	09
70 - 79	B	08
60 - 69	C	07
50 - 59	D	06
40 - 49	E	05
< 40	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 S to F.

- 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 absolute grading system. The Constitution and composition of the moderation board will be dealt with separately.

7. Registration & 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) BBA/B.Com

The student shall not register for less than 16 credits or more than 28 credits in any given semester.

(ii) **BCA**

The student shall not register for less than 14 credits or more than 24 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**

- 10.1. The normal duration of the programme is six semesters. However a student may complete the programme at a slower pace by taking more time, but in any case not more than 10 semesters excluding the semesters withdrawn on medical grounds or other valid reasons.

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% in a semester is not eligible to appear for the end-semester examination. The details of all students who have less than 75% attendance in a course 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 & 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	5%	1 Period
Second Periodical Test	10%	2 Period
Third Periodical Test	10%	3 Periods
End - semester examination	75%	3 Hours

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%.

14.4. For courses on Physical Education, NSS, etc the assessment will be as satisfactory/not satisfactory only.

15. Make up Examination/Periodical Test

15.1. Students who miss the end-semester examinations / periodical test for valid reasons are eligible for make-up examination /periodical test. Those who miss the end-semester examination / periodical test 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 / Exam	Weightage
First Review	10%
Second Review	20%
Third Review	20%
End-semester Exam	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 Registrar / Controller of examination. This will include an external expert.

17. Declaration of results

- 17.1. A candidate who secures not less than 40% of total marks prescribed for a course with a minimum of 40% 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 UG and 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 Director (Academic) with a copy marked to 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 Examinations 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.

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

Classification is based on CGPA and is as follows:

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

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

6.0 \leq CGPA < 7.0 : **Second Class**

5.0 \leq CGPA < 6.0 : **Third Class**

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 consulted 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 BBA / BCA/ B.Com. Degree

21.1. A student will be declared to be eligible for the award of the BBA / BCA / B.Com Degree if he / she has

- i) Registered and successfully obtained credit 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.

22.2 All students who have successfully completed the first semester of the course will be eligible for consideration for change of branch subject to the availability of vacancies.

23. Power to modify

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

HINDUSTAN UNIVERSITY
HINDUSTAN INSTITUTE OF TECHNOLOGY AND SCIENCE
B.C.A (BACHELOR OF COMPUTER APPLICATIONS)
CURRICULUM - 2012 FULL-TIME

Semester I

Code No	Course Title	L	T	P	C	TCH
THEORY						
EL1105	English -1	4	0	0	4	4
MA1104	Applied Mathematics -1	4	1	0	4	5
BC1101	Computer Concepts & Problem Solving	3	0	0	3	3
BC1102	Digital Logic and Fundamentals	3	0	0	3	3
BC1103	Programming in C	3	0	0	3	3
PRACTICALS						
BC1121	Digital Laboratory	0	0	3	1	3
BC1122	Computer Concepts and Problem Solving Laboratory	0	0	3	1	3
BC1123	C Programming Laboratory	0	0	3	1	3
	TOTAL	17	1	9	20	27

Semester II

Code No	Course Title	L	T	P	C	TCH
THEORY						
EL1106	English -II	4	0	0	4	4
MA1105	Applied Mathematics -II	4	1	0	4	5
BC1201	Data Structures	3	0	0	3	3
BC1202	Microprocessors and its applications	3	0	0	3	3
BC1203	Introduction to Accounting	4	1	0	3	5
PRACTICALS						
BC1221	Data Structures Laboratory	0	0	3	1	3
BC1222	Microprocessors Lab	0	0	3	1	3
BC1223	Accounting Laboratory	0	0	3	1	3
	TOTAL	18	2	9	20	29

Semester III

Code No	Course Title	L	T	P	C	TCH
THEORY						
MA1203	Applied Mathematics - III	4	1	0	4	5
BC1301	Algorithm Design Techniques	3	0	0	3	3
BC1302	Software Engineering	4	0	0	4	4
BC1303	Object Oriented Programming	4	1	0	4	5
BC1304	Computer Architecture	3	0	0	3	3
PRACTICALS						
BC1321	Object Oriented Programming Laboratory	0	0	3	1	3
BC1322	Algorithm Design Laboratory	0	0	3	1	3
BC1323	Software Engineering Lab	0	0	3	1	3
	TOTAL	19	2	9	21	29

Semester IV

Code No	Course Title	L	T	P	C	TCH
THEORY						
MA1204	Numerical Methods	3	1	0	4	4
BC1401	Operating Systems	3	0	0	3	3
BC1402	Computer Networks	3	0	2	4	5
BC1403	Database Management Systems	3	0	0	3	3
BC1404	Computer Graphics	3	0	0	3	3
PRACTICALS						
BC1421	Operating Systems Lab	0	0	3	1	3
BC1422	RDBMS Laboratory	0	0	3	1	3
BC1423	Computer Graphics Laboratory	0	0	3	1	3
	TOTAL	15	1	11	20	27

Semester V

Code No	Course Title	L	T	P	C	TCH
THEORY						
BC1501	Multimedia Systems	3	0	0	3	3
BC1502	Internet Programming	3	1	0	4	4
BC1503	Compiler Design	3	1	0	4	4
-----	E1 Elective - I	3	0	0	3	3
-----	E2 Elective - II	3	0	0	3	3
PRACTICALS						
BC1521	Multimedia Systems Lab	0	0	3	1	3
BC1522	Internet Programming Lab	0	0	3	1	3
BC1523	Compiler Design Lab	0	0	3	1	3
	TOTAL	15	2	9	20	26

Semester VI

Code No	Course Title	L	T	P	C	TCH
THEORY						
BC1601	Cryptography and Network Security	3	0	0	3	3
BC1602	Data Warehousing and Data Mining	3	0	2	4	5
-----	E3 Elective - III	3	0	0	3	3
-----	E4 Elective - IV	3	0	0	3	3
-----	E5 Elective - V	3	0	0	3	3
PRACTICALS						
BC1621	Web Applications Laboratory	0	0	3	1	3
BC1622	Project Work	0	0	12	6	12
	TOTAL	15	0	17	23	32

LIST OF ELECTIVES

Code No	Course Title	L	T	P	C	TCH
BC1603	Information Security	3	0	0	3	3
BC1604	Management Information Systems	3	0	0	3	3
BC1605	Advanced Computer Architecture	3	0	0	3	3
BC1606	Advanced Operating Systems	3	0	0	3	3
BC1607	Client Server Computing	3	0	0	3	3
BC1608	Business Data Processing	3	0	0	3	3
BC1609	PC Testing and Trouble Shooting	3	0	0	3	3
BC1610	Software Testing	3	0	0	3	3
BC1611	Artificial Intelligence	3	0	0	3	3
BC1612	Software Project Management	3	0	0	3	3
BC1613	Electronic Commerce	3	0	0	3	3
BC1614	Enterprise Resource Planning	3	0	0	3	3

SEMESTER - I

EL 1105 - ENGLISH - I (Common to all undergraduate branches)

L T P C
4 0 0 4

UNIT I LISTENING SKILL

12

Listening to short conversations, telephone conversations and monologues - Listening to prose & poetry reading -- Listening to sounds and silent letters in English -- Listening to movies - Listening for the gist of the text -- Listening for general meaning and specific information -- Listening for multiple-choice questions -- Listening for positive & negative comments -- Listening for interpretation.

UNIT II SPEAKING SKILL

12

Self-introduction -- Giving information about oneself -- Expressing personal opinion -- Simple oral interaction - Dialogue -- Conversation - Giving and receiving feedback using Johari window - Debates -- Brief presentations -- Differences between disagreeing and being disagreeable -- Participating in group discussions, role plays and interviews -- Generating talks based on visual or written prompts.

UNIT III READING SKILL

12

Reading for skimming - Reading for scanning -- Reading for the gist of a text - Reading for specific information - Reading for information transfer and interpretation (pie chart & bar chart) -- Reading and interpreting anecdotes, short stories, poems - Reading prose passages for comments -- Reading and explaining a Fishbone diagram for pros and cons - Reading comprehension exercises for multiple-choice questions.

UNIT IV WRITING SKILL

12

Writing emails, messages, notices, agendas -- Leaflets and brochures -- Writing paragraphs -- comparisons & contrasts -- Letter-writing -- letter to the editor -- Letter inviting, letter accepting or declining the invitation -- Arranging appointments -- Asking for permission -- Apologizing and offering compensation -- Dealing with requests -- Writing presentations with a plan -- Introduction, Body and Conclusion.

UNIT V THINKING SKILL

12

Eliciting & imparting the knowledge of English using thinking blocks - Developing thinking skills along with critical interpretation side by side with the acquisition of English -- Decoding diagrams & pictorial representations into English words, phrases and expressions.

Total Periods:60

REFERENCES :

1. Norman Whitby. Business Benchmark: Pre-Intermediate to Intermediate - BEC Preliminary. New Delhi: Cambridge University Press, 2008 (Latest South Asian edition).
2. Devaki Reddy & Shreesh Chaudhary. Technical English. New Delhi: Macmillan, 2009.
3. Rutherford, Andrea J. Basic Communication Skills for Technology. 2nd edition. New Delhi: Pearson Education, 2010.

MA1104 - APPLIED MATHEMATICS -I

L T P C
4 1 0 4

UNIT I COMPLEX NUMBERS 12

Expansion of $\sin^n x$ $\cos^n x$ in terms of $\sin x$ and $\cos x$ - Expansion of $\sin^n x$; $\cos^n x$ in terms of sines and cosines of multiples of hyperbolic functions. Inverse hyperbolic functions.

UNIT II MATRICES 12

Rank of matrix - consistency and inconsistency of a system of linear equations - Eigen values and Eigen vectors - Properties - Cayley Hamilton theorem - Reduction of Quadratic form to Canonical form by Orthogonal reduction.

UNIT III DEFINITE INTEGRALS 12

Reduction formula for integral of $\sin^n x$, $\cos^n x$, $\tan^n x$ - Definite integrals - Properties - Area of Cartesian Curves -- volumes of Revolution.

UNIT IV ORDINARY DIFFERENTIAL EQUATIONS 12

Solution of second order with constant coefficients and Variable coefficients - complimentary function - particular integrals - simultaneous linear equations with constant coefficients of first order.

UNIT V APPLICATION OF DIFFERENTIATION 12

Curvature of a curve - Radius of a curvature in Cartesian form - Centre of curvature - Circle of curvature - Evolutes and Envelopes.

Total Periods:60

REFERENCES :

- 1 Veerarajan.T., "Engineering Mathematics", TMH Pub. Co. Ltd., New Delhi 1999.
- 2 Kandasamy.P., Thilagavathy.K. and Gunavathy.K. - "Engineering Mathematics, Volume - I", S.Chand & Co., New Delhi, 2001.

BC1101 - COMPUTER CONCEPTS & PROBLEM SOLVING

L T P C
3 0 0 3

UNIT I FUNDAMENTALS OF COMPUTERS

9

Evolution of Computers - Inputs/Outputs - Alternative Methods of Input - Organization of Modern Digital Computers - Operating System - Multitasking OS - Graphical User Interface.

UNIT II WORD PROCESSING

9

Word Processing Programs and Their Uses - Word Processor's Interface - Editing Text - Formatting Text - Macro- Special Features of Word - Desktop Publishing Service - Converting doc into www pages

UNIT III SPREADSHEET SOFTWARE

9

Spreadsheet Programs - applications - Spreadsheet package features, attributes - structure, label, data, importing data, formula, functions - data handling - Managing workbooks.

UNIT IV INTRODUCTION TO COMPUTER PROBLEM SOLVING

9

Introduction - Problem Solving aspects-Top-Down Design-Implementation of Algorithms - Program Verification-Efficiency of Algorithms-Analysis of Algorithm-fundamental algorithm-factorial computation-generation of Fibonacci sequence.

UNIT V FACTORING AND ARRAY TECHNIQUES

9

Factoring Methods-finding the square root of a number-generating prime numbers- Array techniques array order reversal-Finding the maximum number in a set- Removal of duplicates from an ordered Array-finding the kth smallest element.

Total Periods: 45

REFERENCES :

1. Peter Norton, "Introduction to Computers", 4th Edition, TMH Ltd, New Delhi, 2001.
2. R.G. Dromey, "How to solve it by Computers", Pearson Publishers, New Delhi, 2007.

BC 1102 - DIGITAL LOGIC AND FUNDAMENTALS

L T P C
3 0 0 3

UNIT I INTRODUCTION TO DIGITAL DESIGN

9

Binary Systems : Digital Systems, Binary Numbers, Number Base Conversions, Octal and Hexadecimal Numbers, Complements, Signed Binary Numbers, Binary Codes, Binary Storage and Registers, Binary Logic Boolean Algebra and Logic Gates: Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Digital Logic Gates.

UNIT II LOGIC GATES

9

Minimization: K-Map Method - Table Method, POS - SOP, Don't Care Conditions, NAND, NOR Implementation, Introduction to HDL. Combinational Logic: Combinational Circuits, Analysis and Design Procedure, Binary Adder, Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers.

UNIT III SEQUENTIAL CIRCUIT

9

Synchronous Sequential Logic: Sequential Circuits - Latches, Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment Design Procedure.

UNIT IV DIGITAL COMPONENTS

9

Registers and Counters: Registers, Shift Registers, Ripple Counters, Synchronous Counters, Ring Counters-Johnson Counter.

UNIT V CIRCUIT DESIGN

9

Asynchronous Sequential Circuit : Introduction, Analysis Procedure, Circuits with Latches, Design Procedure, Reduction of State and Flow Tables, Race - Free State Assignment Hazards, Design Example.

Total Periods: 45

REFERENCES :

1. M.Morris Mano, "Digital Design", 3rd edition, Pearson Education, Delhi, 2007.
2. Donald P Leech, Albert Paul Malvino and Goutam Saha, "Digital Principles and Applications", Tata Mc Graw Hill, 2007.

BC 1103 - PROGRAMMING IN C

L T P C
3 0 0 3

UNIT I INTRODUCTION TO C LANGUAGE

9

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

UNIT II ARRAYS AND FUNCTIONS

9

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

UNIT III STRUCTURES AND UNIONS

9

Basics of Structures-Declaring a Structure - Array of Structures -Passing Structures elements to Functions- Passing entire Structure to Function - Structures within Structures - Union - Union of Structures - Enumerated Data Types - type of Statement.

UNIT IV POINTERS

9

Pointers - Declaration, Accessing a variable, dynamic memory allocation, Pointers versus Arrays, Array of pointers, Pointers to functions and structure Pointers.

UNIT V FILE MANAGEMENT

9

File Management in C - Data hierarchy- Files and Streams - Sequential access file- Random access file - Pre-processors.

Total Periods: 45

REFERENCES :

- 1 V.Rajaraman "Computer Programming in C" PHI, New Delhi, 2001.
- 2 Kamthane, A.N., "Programming with ANSI and Turbo C", Pearson Education, Delhi, 2006.
- 3 Yashavant P. Kanetkar " Pointers In C" , BPB Publications, New Delhi, 2002.
- 4 E.Balagurusamy " Programming in ANSI C " , Tata McGraw Hill, 2004.
- 5 Deitel and Deitel " C How to Program " , Addison Wesley , 2001.

BC 1121- DIGITAL LABORATORY

L T P C
0 0 3 1

- 1 . Binary and BCD counter.
- 2 . Verification of NAND, NOR, XOR, AND, OR Gate Logic.
3. Parity Generator.
- 4 . Multiplexer / De multiplexers..
5. Adder / Subtractor.
6. Code Converters.
7. Up / Down 4 bit Binary Counter.
- 8 . Up / Down 4 bit Decimal Counter.
- 9 . Shift Register.
10. Ring Counter.

Total Periods : 45

BC 1122 - COMPUTER CONCEPTS AND PROBLEM SOLVING LABORATORY

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1. Word Processing.
2. Spreadsheet.
3. Power point.
4. Factorial.
5. Fibonacci.
6. Prime Generation.
7. Removal of duplicates from an ordered Array.
8. Finding the kth smallest element.

Total Periods : 45

BC1123 - C PROGRAMMING LABORATORY

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- 1 Input / output function
- 2 Control Functions
- 3 Functions
- 4 Arrays
- 5 Pointers
- 6 Structures and Unions
- 7 Files

Total Periods : 45

Using case studies on: Roots of a quadratic equation, Measures of location - Matrix Operations - Evaluation of trigonometric functions - Pay roll problems. String operations like substring, concatenation, finding a string from a given paragraph, finding the number of words in a paragraph.

SEMESTER - II
EL 1106 - ENGLISH - II
(Common to all undergraduate branches)

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UNIT I LISTENING SKILL **12**

Listening to long dialogues, extended conversations, discussions, soliloquies -- Listening to modern prose & poetry -- Listening to sounds and stressed syllables in English -- Listening to feature films - Listening to presentations - multiple-choice questions - Listening to interviews - Listening to technical topics -- Listening for the gist of the text -- Listening for general meaning and specific information -- Listening for identifying a topic -- Listening for filling the gaps -- Listening for advanced interpretation.

UNIT II SPEAKING SKILL **12**

Speaking casually to an individual, a small group, a large audience - Addressing a gathering formally -- Speaking to speculate, compare, contrast, justify, agree and disagree on advanced topics - Talking about present and past experiences and future plans - Debates, discussions and role plays on advanced topics - Job interviews - Preparing HR questions with possible answers -- Brief presentations - Arguing out a topic without verbal fights -- Power point presentation based on current topics.

UNIT III READING SKILL **12**

Reading for advanced skimming and scanning -- Reading for the gist of a text - Reading for specific information - Reading for understanding the text structure, sentence structure and error identification - Reading for contextual meaning -- Reading newspapers, magazine articles and critical texts - Reading advanced short stories, poems and prose passages for intellectual and emotional comments -- Reading short texts for identifying unnecessary words. - Reading exercises for multiple-choice questions.

UNIT IV WRITING SKILL **12**

Writing Instructions, recommendations, functional checklists - Writing the minutes of a meeting - Writing formal business letters - sales, placing orders, complaints -- Letter requesting permission for industrial visits or implant training, enclosing an introduction to the educational institution -- Letters of application for a job, enclosing a CV or Resume -- Writing short reports -- describing, summarizing - Industrial accident reports -- Writing short proposals -- describing, summarizing, recommending, persuading.

UNIT V THINKING SKILL **12**

Imparting the knowledge of English using thinking blocks - Conversion of thinking blocks into orthographic version -- Interpretation and acquisition of English -- Decoding diagrams and pictorial representations into English idioms, sayings and proverbs.

Total Periods:60

REFERENCES :

1. Norman Whitby. Business Benchmark: Pre-Intermediate to Intermediate - BEC Preliminary. New Delhi: Cambridge University Press, 2008.
2. Devaki Reddy & Shreesh Chaudhary. Technical English. New Delhi: Macmillan, 2009.
3. Rutherford, Andrea J. Basic Communication Skills for Technology. 2nd edition. New Delhi: Pearson Education, 2010.

MA 1105 - APPLIED MATHEMATICS - II

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4 1 0 4

UNIT I MULTIPLE INTEGRALS

12

Double integration- Cartesian and polar co-ordinates- Change of order of integration- Area as a double integral, Change of variables between Cartesian and polar co- ordinates- Triple integration- Volume as a triple integral

UNIT II FOURIER SERIES

12

Dirichlet's condition-General Fourier series-Odd and even functions-Half range Fourier series-Parseval's identity-Harmonic analysis

UNIT III COMPLEX DIFFERENTIATION

12

Functions of complex variable-analytic function-Necessary Condition-Cauchy Riemann equation-Sufficient conditions (excluding proof) -Properties of analytic functions- Harmonic conjugate-Construction of analytic functions - Conformal Mapping - $w=z+a, w=az, w=1/z, w=z^2$ -Bilinear transformation.

UNIT IV COMPLEX INTEGRATION

12

Statement and applications of Cauchy's Integral theorem and formula-Taylor's and Laurent's

expansions- Isolated singularities- Residues-Cauchy's residue theorem- Contour integration over unit circle and semi circular contour (excluding poles on boundaries).

UNIT V LAPLACE TRANSFORM

12

Laplace Transforms-Condition for existence-Transforms of Elementary functions- Basic properties-Derivatives and integrals of transforms- Transforms of derivatives and integrals - Initial and Final value theorem- Transform of unit step functions and impulse function- Transform of Periodic function-Inverse Laplace transform- Convolution theorem- Solution of linear ODE of second order with constant co-efficient, using Laplace transformation.

Total Periods: 60

REFERENCES:

- 1 Kandasamy. P, Thilagavathy K and Gunavathy K, Engineering Mathematics for First year B.E/ B.Tech, S.Chand and company Ltd, New Delhi-110055, Seventh Revised edition 2007
- 2 Veerarajan T , Engineering Mathematics (for First year) Tata Mc Graw Hill Publishing co. New Delhi 110008 (2008)
- 3 Grewal B.S, Higher Engineering Mathematics 38th edition, Khanna Publishers New Delhi (2004).

BC 1201- DATA STRUCTURES

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UNIT I PROBLEM SOLVING**9**

Problem solving - Top-down Design- Implementation- Verification- Efficiency-Analysis - Sample algorithms.

UNIT II LISTS, STACKS AND QUEUES**9**

Abstract Data Type (ADT) - The List ADT - The Stack ADT - The Queue ADT

UNIT III TREES**9**

Preliminaries - Binary Trees - The Search Tree ADT - Binary Search Trees - AVL Trees - Tree Traversals - Hashing - General Idea - Hash Function - Separate Chaining - Open addressing - Linear Probing - Priority Queues (Heaps) - Model - Simple implementations - Binary Heap

UNIT IV SORTING**9**

Preliminaries- Insertion Sort - Shells sort -Heap sort- Merge sort-Quick sort- External Sorting

UNIT V GRAPHS**9**

Definitions- Topological Sort- Shortest-Path Algorithms-Un weighted Shortest Paths- Dijkstra's Algorithm- Minimum Spanning Tree- Prim's Algorithm-Applications of Depth- First Search-Undirected Graphs -Bi connectivity- Introduction to NP-Completeness.

Total periods : 45**REFERENCES:**

- 1 R. G. Dromey, "How to Solve it by Computer" (Chaps 1-2), Prentice-Hall of India, 2002.
- 2 M. Allen Weiss, "Data Structures and Algorithm Analysis in C", 2nd edition, Pearson Education Asia, 2002.
- 3 ISRD Group, "Data Structures using C", Tata McGraw Hill, 2007
- 4 Richard F. Gilberg, Behrouz A. Forouzan, "Data Structures - A Pseudocode Approach with C", Thomson Brooks / COLE, 1998.

BC 1202 - MICROPROCESSORS AND ITS APPLICATIONS

L T P C
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UNIT I INTRODUCTION TO 8085 MICROPROCESSOR

9

8085 Microprocessor: The 8085 MPU- Architecture - Instruction formats - Addressing modes - Instruction set - Programming with 8085 - 8085 based microcomputer system.

UNIT II INTRODUCTION TO 8086 MICROPROCESSOR

9

8086 Software Aspects: Intel 8086 Microprocessor - Architecture - Assembly Language Programming - Linking and relocation - Stacks - Procedures - Macros - Interrupts and Interrupt Routines - Byte & String Manipulation.

UNIT III 8086 SYSTEM DESIGN

9

8086 System Design: 8086 signals - Basic configurations - System bus timing - system design using 8086 - Multiprocessor configurations - Coprocessor, Closely coupled and loosely coupled configurations.

UNIT IV 8086 MICROPROCESSOR INTERFACING

9

I/O Interfaces: Serial Communication Interface - Parallel communication interface - Programmable Timer - Keyboard and Display controller - DMA controller - Interrupt controller - Maximum Mode and 16-bit bus interface designs.

UNIT V ADVANCED PROCESSORS

9

Advanced Processors: Intel's 80X 86 families of processors - Salient features of 80286, 80386, 80486 and the Pentium Processors.

Total Periods: 45

REFERENCES:

1. Ramesh S. Gaonkar, "Microprocessor Architecture, Programming and Applications with the 8085", 4th Edition, Penram International Publishing (India) Pvt. Ltd., 1999.
2. Douglas v. Hall, "Microprocessors and Interfacing", Tata Mcgraw Hill, 1999.
3. Yu-cheng liu and Glenn a. Gibson, "Microcomputer Systems: The 8086/8088 Family Architecture, Programming & Design", 2nd Edition, Prentice Hall of India pvt. Ltd., 2001.
4. Barry b. Brey, "The Intel Microprocessors - 8086/8088, 80186, 286, 386, 486, Pentium and Pentium Pro Processor", Prentice Hall of India Pvt. Ltd., 1998.

BC 1203 - INTRODUCTION TO ACCOUNTING

L T P C
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UNIT I

9

Commerce definition - Elements - Form of business - Sole Proprietor - Partnership - company - Private and Public - Public sector: Features and merits.

UNIT II

9

Introduction to Marketing Definition, nature, scope and importance of marketing, Approaches to the study of marketing and economic development, traditional and modern concept of marketing, Function of marketing.

UNIT III

9

Fundamentals of Bookkeeping - Accounting Concepts and Conventions - Journal - Ledger - Subsidiary books - Trail balance - Preparation of bank reconciliation statement - Errors and their rectification.

UNIT IV

9

Bills of Exchange: Accommodation bills - Account Current - Average due date.

UNIT V

9

Final Accounts: Opening, Closing and Adjustment entries - Manufacturing, Trading and Profit and Loss Accounts - Balance Sheet, Accounts of non-profit organizations- receipts and payments and income and expenditure accounts and balance sheet; Accounts of professionals.

Total Periods: 45

REFERENCES :

1. Jain and Nearing, "Advanced Accounting", Kalia Publishers
2. Gupta R L and Radhaswamy M, "Advanced Accountancy", Sultan Chand
3. Tulsian P C, "Financial Accounting", Tata Mc. Graw Hill Publications
4. Bhushan Y K, "Business Organisation", S.Chand & Co.

BC 1221 - DATA STRUCTURES LABORATORY

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LIST OF EXERCISES

Implement the following exercises using C:

1. Array implementation of List Abstract Data Type (ADT)
2. Linked list implementation of List ADT
3. Cursor implementation of List ADT
4. Array implementations of Stack ADT

5. Linked list implementations of Stack ADT

The following three exercises are to be done by implementing the following source files

- (a) Program for 'Balanced Parenthesis'
- (b) Array implementation of Stack ADT
- (c) Linked list implementation of Stack ADT
- (d) Program for 'Evaluating Postfix Expressions'

An appropriate header file for the Stack ADT should be #included in (a) and (d)

- 6. Implement the application for checking 'Balanced Parenthesis' using array implementation of Stack ADT (by implementing files (a) and (b) given above)
- 7. Implement the application for checking 'Balanced Parenthesis' using linked list implementation of Stack ADT (by using file (a) from experiment 6 and implementing file (c))
- 8. Implement the application for 'Evaluating Postfix Expressions' using array and linked list implementations of Stack ADT (by implementing file (d) and using file (b), and then by using files (d) and (c))
- 9. Queues ADT
- 10. Search Tree ADT - Binary Search Tree.

Total Periods : 45

BC 1222 - MICROPROCESSORS LAB

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- 1. Fundamentals of 8085 Programming
- 2. Fundamentals of 8086 Programming
- 3. Interfacing with Input/output Devices
- 4. Parallel peripheral Input/output - Timer - Keyboard Controller - Display
- 5. Controller - Interrupt Controller, Communication Input/output.

Total Periods : 45

BC 1223 - ACCOUNTING LABORATORY

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THEORY

Accounting - Introduction, Features, Objectives -Configuration, Chart of Accounts -Accounting Package
- Concepts of Double Entry System - (15) Concepts of preparing Final Accounts

LIST OF EXERCISES

1. Company Creation, preparation of groups.
2. Preparation of ledgers.
3. Preparation of Voucher.
4. Preparation of Profit and Loss Account.
5. Preparations of Final Accounts with and without Adjustments.
6. Cash Flow and Fund Flow Analysis.
7. Preparation of Ratio Analysis.
8. Stock Transactions.
9. F11 - Features and F12 - Configurations.
10. Other Features and Report Generation.

Total Periods : 45

SEMESTER-III
MA 1203 - APPLIED MATHEMATICS III

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UNIT I PARTIAL DIFFERENTIAL EQUATIONS 12

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions - Solution of standard types of first order partial differential equations - Lagrange's linear equation - Linear partial differential equations of second and higher order with constant coefficients.

UNIT II FOURIER SERIES 12

Dirichlet's conditions - General Fourier series - Odd and even functions - Half range sine series- Half range cosine series - Complex form of Fourier Series - Parseval's identify - Harmonic Analysis.

UNIT III BOUNDARY VALUE PROBLEMS 12

Classification of second order quasi linear partial differential equations - Solutions of one dimensional wave equation - One dimensional heat equation - Steady state solution of two dimensional heat equation (Insulated edges excluded) - Fourier series solutions in Cartesian coordinates.

UNIT IV FOURIER TRANSFORM 12

Fourier integral theorem (without proof) - Fourier transform pair - Sine and Cosine transforms -Properties - Transforms of simple functions - Convolution theorem - Parseval's identity.

UNIT V Z-TRANSFORM AND DIFFERENCE EQUATIONS 12

Z-transform - Elementary properties - Inverse Z - transform - Convolution theorem -Formation of difference equations - Solution of difference equations using Z - transform.

Total Periods: 60

REFERENCES :

1. Grewal, B.S., "Higher Engineering Mathematics", Thirty Sixth Edition, Khanna Publishers, Delhi, 2001.
2. Kandasamy, P., Thilagavathy, K., and Gunavathy, K., "Engineering Mathematics Volume III", S. Chand & Company Ltd., New Delhi, 1996.
3. Wylie C. Ray and Barrett Louis, C., "Advanced Engineering Mathematics", Sixth Edition, McGraw-Hill, Inc., New York, 1995.
4. Narayanan, S., Manicavachagom Pillay, T.K. and Ramaniah, G., "Advanced Mathematics for Engineering Students", Volumes II and III, S. Viswanathan (Printers and Publishers) Pvt. Ltd. Chennai, 2002.

BC 1301 - ALGORITHM DESIGN TECHNIQUES

L T P C
3 0 0 3

UNIT I INTRODUCTION

9

Introduction - Notion of Algorithm - 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.

INIT II DIVIDE AND CONQUER METHOD AND GREEDY METHOD

9

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

9

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

UNIT IV BACKTRACKING AND BRANCH AND BOUND

9

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

UNIT V NP-HARD AND NP-COMPLETE PROBLEMS

9

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

Total Periods: 45

REFERENCES :

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" Prentice Hall 1990.
3. SaraBaase and Allen Van Gelder, "Computer Algorithms - Introduction to Design and Analysis" Pearson education, 2003.
4. A.V.Aho, J.E Hopenfit and J.D.Ullman, "The Design and Analysis of Computer algorithms" Pearson education Asia, 2003.

BC 1302 - SOFTWARE ENGINEERING

L T P C
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UNIT I SOFTWARE PROCESS

9

Introduction -S/W Engineering Paradigm - life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) - system engineering - computer based system - verification - validation - life cycle process - development process -system engineering hierarchy.

UNIT II SOFTWARE REQUIREMENTS

9

Functional and non-functional - user - system -requirement engineering process - feasibility studies - requirements - elicitation - validation and management - software prototyping - prototyping in the software process - rapid prototyping techniques - user interface prototyping - S/W document. Analysis and modelling - data, functional and behavioural models - structured analysis and data dictionary.

UNIT III DESIGN CONCEPTS AND PRINCIPLES

9

Design process and concepts - modular design - design heuristic - design model and document. Architectural design - software architecture - data design - architectural design - transform and transaction mapping - user interface design - user interface design principles. Real time systems - Real time software design - system design - real time executives - data acquisition system - monitoring and control system. SCM - Need for SCM - Version control - Introduction to SCM process - Software configuration items.

UNIT IV TESTING

9

Taxonomy of software testing - levels - test activities - types of s/w test - black box testing - testing boundary conditions - structural testing - test coverage criteria based on data flow mechanisms - regression testing - testing in the large. S/W testing strategies - strategic approach and issues - unit testing - integration testing - validation testing - system testing and debugging.

UNIT V SOFTWARE PROJECT MANAGEMENT

9

Measures and measurements - S/W complexity and science measure - size measure - data and logic structure measure - information flow measure. Software cost estimation - function point models - COCOMO model- Delphi method.- Defining a Task Network - Scheduling - Earned Value Analysis - Error Tracking - Software changes - program evolution dynamics - software maintenance - Architectural evolution. Taxonomy of CASE tools.

Total Periods : 45

REFERENCES :

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 6th edition, 2004.
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
4. James F Peters and Witold Pedryez, "Software Engineering - An Engineering Approach", John Wiley and Sons, New Delhi, 2000.

BC 1303 - OBJECT ORIENTED PROGRAMMING

L T P C
4 1 0 4

UNIT I INTRODUCTION

9

Object-oriented paradigm, elements of object oriented programming - Merits and demerits of OO methodology - C++ fundamentals - data types, operators and expressions, control flow, arrays, strings, pointers and functions.

UNIT II ROGRAMMING IN C++

9

Classes and objects - constructors and destructors, operator overloading - inheritance, virtual functions and polymorphism

UNIT III FILE HANDLING

9

C++ streams - console streams - console stream classes-formatted and unformatted console I/O operations, manipulators - File streams - classes file modes file pointers and manipulations file I/O - Exception handling

UNIT IV JAVA INTRODUCTION

9

An overview of Java, data types, variables and arrays, operators, control statements, classes, objects, methods - Inheritance.

UNIT V JAVA PROGRAMMING

9

Packages and Interfaces, Exception handling, Multithreaded programming, Strings, Input /Output.

Total Periods: 45

REFERENCES :

1. Herbert Schildt, "the Java 2 : Complete Reference", Fourth edition, TMH, 2002 (Unit IV, Unit-V) (Chapters 1-11,13,17)
2. Ira Pohl, "Object oriented programming using C++", Pearson Education Asia, 2003
3. Bjarne Stroustrup, "The C++ programming language", Addison Wesley, 2000
4. John R.Hubbard, "Progranning with C++", Schaums outline series, TMH, 2003
5. H.M.Deitel, P.J.Deitel, "Java : how to program", Fifth edition, Prentice Hall of India private limited.

BC 1304 - COMPUTER ARCHITECTURE

L T P C
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UNIT I BASIC STRUCTURE OF COMPUTERS

9

Functional units - Basic operational concepts - Bus structures - Software performance - memory locations and addresses - Memory operations - Instruction and instruction sequencing - Addressing modes - Assembly language - Basic I/O operations - Stacks and queues.

UNIT II ARITHMETIC UNIT

9

Addition and subtraction of signed numbers - Design of fast adders - Multiplication of positive numbers - Signed operand multiplication and fast multiplication - Integer division - Floating point numbers and operations.

UNIT III BASIC PROCESSING UNIT

9

Fundamental concepts - Execution of a complete instruction - Multiple bus organization - Hardwired control - Micro programmed control - Pipelining - Basic concepts - Data hazards - Instruction hazards - Influence on Instruction sets - Data path and control consideration - Superscalar operation.

UNIT IV MEMORY SYSTEM

9

Basic concepts - Semiconductor RAMs - ROMs - Speed - size and cost - Cache memories - Performance consideration - Virtual memory- Memory Management requirements - Secondary storage.

UNIT V I/O ORGANIZATION

9

Accessing I/O devices - Interrupts - Direct Memory Access - Buses - Interface circuits - Standard I/O Interfaces (PCI, SCSI, USB).

Total Periods: 45

REFERENCES :

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, 5th Edition "Computer Organization", McGraw-Hill, 2002.
2. William Stallings, "Computer Organization and Architecture - Designing for Performance", 6th Edition, Pearson Education, 2003.
3. David A. Patterson and John L. Hennessy, "Computer Organization and Design: The hardware / software interface", 2nd Edition, Morgan Kaufmann, 2002.
4. John P. Hayes, "Computer Architecture and Organization", 3rd Edition, McGraw Hill, 1998.

BC 1321 - OBJECT ORIENTED PROGRAMMING LABORATORY

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EXPERIMENTS USING C++

1. Programs Using Functions
 - Functions with default arguments
 - Implementation of Call by Value, Call by Address and Call by Reference
2. Simple Classes for understanding objects, member functions and Constructors
 - Classes with primitive data members
 - Classes with arrays as data members
 - Classes with pointers as data members - String Class
 - Classes with constant data members
 - Classes with static member functions
3. Compile time Polymorphism
 - Operator Overloading including Unary and Binary Operators.
 - Function Overloading
4. Runtime Polymorphism
 - Inheritance
 - Virtual functions
 - Virtual Base Classes
 - Templates
5. File Handling
 - Sequential access
 - Random access

JAVA

6. Simple Java applications
 - for understanding reference to an instance of a class (object), methods
 - Handling Strings in Java
7. Simple Package creation.
 - Developing user defined packages in Java
8. Interfaces
 - Developing user-defined interfaces and implementation
 - Use of predefined interfaces

9. Threading
 - Creation of thread in Java applications
 - Multithreading
10. Exception Handling Mechanism in Java
 - Handling pre-defined exceptions
 - Handling user-defined exceptions

Total Periods: 45

BC1322 - ALGORITHMS DESIGN LABORATORY

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1. Apply the divide and Conquer technique to arrange a set of numbers using merge sort method.
2. Perform Stassen's matrix multiplication using divide and conquer method.
3. Solve the knapsack problem using greedy method.
4. Construct a minimum spanning tree using greedy method.
5. Construct optimal binary search trees using dynamic programming method of problem solving.
6. Find the solution for travelling salesperson problem using dynamic programming approach.
7. Perform graph traversals.
8. Implement the 8-Queens Problem using backtracking.
9. Implement knapsack problem using backtracking.
10. Find the solution of travelling salesperson problem using backtracking

Total Periods : 45

BC1323 - SOFTWARE ENGINEERING LABORATORY

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LIST OF EXERCISES:

1. Practice requirements elicitation
2. Practice requirement analysis and project plan
3. SRS Documentation
4. Cost estimation models
5. Practice design techniques using case tools.
6. Simulate Software architectural components.
7. Generation of test cases for testing

8. Unit testing
9. Integration testing
10. Creating software documentation for all the phases of software life cycle development.

Note: All the above exercises are to be carried out by using any real time application such as Library Management System, Payroll processing, Hospital management system, Inventory management etc. Any other application indicated by the Instructor can also be used.

Total Periods: 45

SEMESTER-IV
MA1204 - NUMERICAL METHODS

L T P C
3 1 0 4

UNIT I SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS 12

Linear interpolation methods (method of false position) - Newton's method - Statement of Fixed Point Theorem - Fixed point iteration: $x=g(x)$ method - Solution of linear system by Gaussian elimination and Gauss-Jordon methods- Iterative methods: Gauss Jacobi and Gauss-Seidel methods- Inverse of a matrix by Gauss Jordon method - Eigen value of a matrix by power method.

UNIT II INTERPOLATION AND APPROXIMATION 12

Lagrangian Polynomials - Divided differences - Interpolating with a cubic spline - Newton's forward and backward difference formulas.

UNIT III NUMERICAL DIFFERENTIATION AND INTEGRATION 12

Derivatives from difference tables - Divided differences and finite differences - Numerical integration by trapezoidal and Simpson's 1/3 and 3/8 rules - Romberg's method - Two and Three point Gaussian quadrature formulas - Double integrals using trapezoidal and Simpson's rules.

UNIT IV INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS 12

Single step methods: Taylor series method - Euler and modified Euler methods - Fourth order Runge - Kutta method for solving first and second order equations - Multistep methods: Milne's and Adam's predictor and corrector methods.

UNIT V BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS 12

Finite difference solution of second order ordinary differential equation - Finite difference solution of one dimensional heat equation by explicit and implicit methods - One dimensional wave equation and two dimensional Laplace and Poisson equations.

Total Periods : 60

REFERENCES :

1. Gerald, C.F, and Wheatley, P.O, "Applied Numerical Analysis", Sixth Edition, Pearson Education Asia, New Delhi, 2002.
2. Kandasamy, P., Thilagavathy, K. and Gunavathy, K., "Numerical Methods", S.Chand Co. Ltd., New Delhi, 2003.
3. Balagurusamy, E., "Numerical Methods", Tata McGraw-Hill Publication Co.Ltd, New Delhi, 1999.
4. Burden, R.L and Faires, T.D., "Numerical Analysis", Seventh Edition, Thomson Asia Pvt. Ltd., Singapore, 2002.

BC1401 - OPERATING SYSTEMS

L T P C
3 0 0 3

UNIT I INTRODUCTION

9

Introduction - Mainframe systems - Desktop Systems - Multiprocessor Systems - Distributed Systems - Clustered Systems - Real Time Systems - Handheld Systems - Hardware Protection- System Components - Operating System Services - System Calls - System Programs -Process Concept - Process Scheduling - Operations on Processes - Cooperating Processes -Inter-process Communication.

UNIT II SCHEDULING

9

Threads - Overview - Threading issues - CPU Scheduling - Basic Concepts - Scheduling Criteria - Scheduling Algorithms - Multiple-Processor Scheduling - Real Time Scheduling - The Critical-Section Problem - Synchronization Hardware - Semaphores - Classic problems of Synchronization - Critical regions - Monitors.

UNIT III MEMORY ALLOCATION

9

System Model - Deadlock Characterization - Methods for handling Deadlocks -Deadlock Prevention - Deadlock avoidance - Deadlock detection - Recovery from Deadlocks - Storage Management - Swapping - Contiguous Memory allocation - Paging - Segmentation - Segmentation with Paging.

UNIT IV MEMORY MANAGEMENT

9

Virtual Memory - Demand Paging - Process creation - Page Replacement - Allocation of frames - Thrashing - File Concept - Access Methods - Directory Structure - File System Mounting - File Sharing - Protection

UNIT V FILE STRUCTURE

9

File System Structure - File System Implementation - Directory Implementation - Allocation Methods - Free-space Management. Kernel I/O Subsystems - Disk Structure - Disk Scheduling- Disk Management - Swap-Space Management. Case Study: The Linux System, Windows

Total Periods:45

REFERENCES:

1. Abraham Silberschartz, Peter Baer Galvin and Greg Gagne, "Operating System Concepts", Sixth Edition, John Wiley & Sons (ASIA) Pvt. Ltd, 2003.
2. Harvey M. Deitel, "Operating Systems", Second Edition, Pearson Education Pvt. Ltd, 2002.
3. William Stallings, "Operating System", Prentice Hall of India, 4th Edition, 2003.
4. Pramod Chandra P. Bhatt - "An Introduction to Operating Systems, Concepts and Practice", PHI, 2003.

BC1402 - COMPUTER NETWORKS

L T P C
3 0 2 4

UNIT I DATA COMMUNICATIONS

9

Components - Direction of Data flow - networks - Components and Categories - types of Connections - Topologies - Protocols and Standards - ISO / OSI model - Transmission Media - Coaxial Cable - Fiber Optics - Line Coding - Modems - RS232 Interfacing sequences.

UNIT II DATA LINK LAYER

9

Error - detection and correction - Parity - LRC - CRC - Hamming code - low Control and Error control - stop and wait - go back-N ARQ - selective repeat ARQ- sliding window - HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 - FDDI - SONET - Bridges.

UNIT III NETWORK LAYER

9

Internetworks - Packet Switching and Datagram approach - IP addressing methods - Subnetting - Routing - Distance Vector Routing - Link State Routing - Routers.

UNIT IV TRANSPORT LAYER

9

Duties of transport layer - Multiplexing - Demultiplexing - Sockets - User Datagram Protocol (UDP) - Transmission Control Protocol (TCP) - Congestion Control - Quality of services (QOS) - Integrated Services.

UNIT V APPLICATION LAYER

9

Domain Name Space (DNS) - SMTP - FTP - HTTP - WWW - Security - Cryptography.

Total Periods : 45

REFERENCES :

1. Behrouz A. Forouzan, "Data communication and Networking", Tata McGraw-Hill, 2004.
2. James F. Kurose and Keith W. Ross, "Computer Networking: A Top-Down Approach Featuring the Internet", Pearson Education, 2003.
3. Andrew S. Tanenbaum, "Computer Networks", PHI, Fourth Edition, 2003.
4. William Stallings, "Data and Computer Communication", Sixth Edition, Pearson Education, 2000.

BC1403 - DATABASE MANAGEMENT SYSTEMS

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UNIT I INTRODUCTION

9

Advantages and Components of a Database Management Systems - Feasibility Study - Class Diagrams - Data Types - Events - Normal Forms - Integrity - Converting Class Diagrams to Normalized Tables - Data Dictionary.

UNIT II QUERY

9

Query Basics - Computation Using Queries - Subtotals and GROUP BY Command - Queries with Multiple Tables - Sub queries - Joins - DDL & DML - Testing Queries.

UNIT III REPORTS

9

Effective Design of Forms and Reports - Form Layout - Creating Forms - Graphical Objects - Reports - Procedural Languages - Data on Forms - Programs to Retrieve and Save Data - Error Handling.

UNIT IV DATABASE STORAGE

9

Power of Application Structure - User Interface Features - Transaction - Forms Events - Custom Reports - Distributing Application - Table Operations - Data Storage Methods - Storing Data Columns - Data Clustering and Partitioning.

UNIT V DATABASE ADMINISTRATION

9

Database Administration - Development Stages - Application Types - Backup and Recovery - Security and Privacy - Distributed Databases - Client/Server Databases Web as a Client/Server System - Objects - Object Oriented Databases - Integrated Applications.

Total Periods : 45

REFERENCES:

1. G. V. Post - Database Management Systems Designing and Building Business Application - McGraw Hill International edition - 1999.
2. Raghu Ramakrishnan - Database Management Systems - WCB/McGraw Hill - 1998.
3. C.J. Date - An Introduction to Database Systems - 7th Edition - Addison Wesley - 2000.

BC 1404 - COMPUTER GRAPHICS

L T P C
3 0 0 3

UNIT I OVERVIEW OF COMPUTER GRAPHICS SYSTEM 9

Over View of Computer Graphics System - Video display devices - Raster Scan and random scan system - Input devices - Hard copy devices.

UNIT II OUTPUT PRIMITIVES AND ATTRIBUTES 9

Drawing line, circle and ellipse generating algorithms - Scan line algorithm - Character generation - attributes of lines, curves and characters - Antialiasing.

UNIT III TWO DIMENSIONAL GRAPHICS TRANSFORMATIONS AND VIEWING 9

Two-dimensional Geometric Transformations - Windowing and Clipping - Clipping of lines and clipping of polygons.

UNIT IV THREE DIMENSIONAL GRAPHICS AND VIEWING 9

Three-dimensional concepts - Object representations- Polygon table, Quadric surfaces, Splines Bezier curves and surfaces - Geometric and Modelling transformations - Viewing - Parallel and perspective projections.

UNIT V REMOVAL OF HIDDEN SURFACES 9

Visible Surface Detection Methods - Computer Animation.

Total Periods : 45

REFERENCES :

1. Hearn, D. and Pauline Baker, M., Computer Graphics (C-Version), 2nd Edition, Pearson Education.
2. Neuman, W.M., and Sproull, R.F., Principles of Interactive Computer Graphics, 2nd Edition, McGraw Hill Book Co.

BC1421 - OPERATING SYSTEM LAB

L T P C
0 0 3 1

(Implement the following on LINUX platform. Use C for high level language Implementation)

1. Shell programming- command syntax- write simple functions- basic tests
2. Shell programming- loops- patterns- expansions- substitutions
3. Write programs using the following system calls of UNIX operating system: fork, exec, getpid, exit, wait, close, stat, open dir, read dir
4. Write programs using the I/O system calls of UNIX operating system (open, read, write,etc)
5. Write C programs to simulate UNIX commands like ls, grep, etc.
6. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time
7. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time
8. Implement the Producer - Consumer problem using semaphores.
9. Implement some memory management schemes - I
10. Implement some memory management schemes - II

Example for expt 9 & 10 :

Free space is maintained as a linked list of nodes with each node having the starting byte address and the ending byte address of a free block. Each memory request consists of the process-id and the amount of storage space required in bytes. Allocated memory space is again maintained as a linked list of nodes with each node having the process-id, starting byte address and the ending byte address of the allocated space. When a process finishes (taken as input) the appropriate node from the allocated list should be deleted and this free disk space should be added to the free space list. [Care should be taken to merge contiguous free blocks into one single block. This results in deleting more than one node from the free space list and changing the start and end address in the appropriate node]. For allocation use first fit, worst fit and best fit.

Total Periods: 45

COMPUTER NETWORKS LABORATORY
(COMPONENT LAB BC1402-COMPUTER NETWORKS)

1. Applications using TCP Sockets like
 - a. Echo client and echo server
 - b. File transfer
 - c. Remote command execution
 - d. Chat
 - e. Concurrent server
2. Applications using UDP Sockets like
 - a. DNS
 - b. SNMP
3. Applications using Raw Sockets like
 - a. Ping
 - b. Trace route
4. RPC
5. Experiments using simulators like OPNET:
 - a. Performance comparison of MAC protocols
 - b. Performance comparison of Routing protocols
 - c. Study of TCP/UDP performance

BC1422 - RELATIONAL DATABASE MANAGEMENT SYSTEMS LAB

L T P C
0 0 3 1

Creation of a Database and performing the operations given below using a Menu Driven Program.

a) Insertion b) Deletion c) Modification d) Generating a Simple report for the following:

1. Payroll
2. Mark sheet Processing
3. Saving Bank account for banking
4. Inventory System
5. Library information system
6. Student information system
7. Electricity bill preparation system
8. Telephone directory maintenance.

Total Periods : 45

BC 1423- COMPUTER GRAPHICS LABORATORY

L T P C
0 0 3 1

1. Line drawing algorithms
2. Circle drawing algorithms
3. Eclipse drawing algorithms
4. Two dimensional transformations
5. Windowing and clipping
6. Three dimensional transformations
7. Simple animation

Total Periods: 45

SEMESTER V
BC1501 - MULTIMEDIA SYSTEMS

L T P C
3 0 0 3

UNIT I INTRODUCTION TO MULTIMEDIA

9

Introduction to making Multimedia- Multimedia Skills and training- Text: Using text in Multimedia- Computer and Text- Font Editing and Design Tools- Hypermedia and Hypertext

UNIT II MULTIMEDIA FILE HANDLING

9

Sound - Images - Animation - Video

UNIT III DIGITAL VIDEO AND IMAGE COMPRESSION

9

Evaluating a compression system - Redundancy and visibility-Video compression techniques- Standardization of an algorithm - The JPEG image compression standard-ITU -T Standards -MPEG motion video compression standard-DVI Technology.

UNIT IV HARDWARE, SOFTWARE AND MULTIMEDIA AUTHORIZING TOOLS

9

Multimedia Hardware: Macintosh and Windows production platforms-Hardware Peripherals:Memory and Storage Devices, Input Devices, Output Devices, Communication Devices .Basic Software Tools

UNIT V MULTIMEDIA AND INTERNET

9

Internetworking -connections -Internet services -Tools for WWW - Designing WWW.

Total Periods :45

REFERENCES :

1. Multimedia: Making It Work, Tay Vaughan, 7th Edition, Tata Mc-Graw Hill.(Unit I, II, IV and V), 2008.
2. Multimedia Systems, John F.Koegel Buford, Pearson edition, 2003. (unit III).
3. Ranjan Parekh, Principles of Multimedia, TMH, 2006.
4. Multimedia: Computing, Communication and applications, Ralf Steinmetz and Klara Nahrstedt, Pearson Edition, 2001.

BC1502 - INTERNET PROGRAMMING

L T P C
3 1 0 4

UNIT I BASIC NETWORK AND WEB CONCEPTS

9

Internet standards - TCP and UDP protocols - URLs - MIME - CGI - Introduction to SGML.

UNIT II JAVA PROGRAMMING

9

Java basics - I/O streaming - files - Looking up Internet Address - Socket programming - client /server programs - E-mail client - SMTP - POP3 programs - web page retrieval - protocol handlers - content handlers - applets - image handling - Remote Method Invocation.

UNIT III SCRIPTING LANGUAGES

9

HTML - forms - frames - tables - web page design - JavaScript introduction - control structures- functions - arrays - objects - simple web applications

UNIT IV DYNAMIC HTML

9

Dynamic HTML - introduction - cascading style sheets - object model and collections -event model - filters and transition - data binding - data control - ActiveX control - handling of multimedia data

UNIT V SERVER SIDE PROGRAMMING

9

Servlets - deployment of simple servlets - web server (Java web server / Tomcat / Web logic) - HTTP GET and POST requests - session tracking - cookies - JDBC - simple web applications - multi-tier applications.

Total Periods : 45

REFERENCES :

1. Deitel, Deitel and Nieto, "Internet and World Wide Web - How to program", Pearson Education Publishers, 2000.
2. Elliotte Rusty Harold, "Java Network Programming", O'Reilly Publishers, 2002
3. R. Krishnamoorthy & S. Prabhu, "Internet and Java Programming", New Age International Publishers, 2004.
4. Thomno A. Powell, "The Complete Reference HTML and XHTML", fourth edition, Tata McGraw Hill, 2003.
5. Naughton, "The Complete Reference - Java2", Tata McGraw-Hill, 3rd edition, 1999.

BC1503 - COMPILER DESIGN

L T P C
3 1 0 4

UNIT I INTRODUCTION TO COMPILING 9

Compilers - Analysis of the source program - Phases of a compiler - Cousins of the Compiler - Grouping of Phases - Compiler construction tools - Lexical Analysis - Role of Lexical Analyzer - Input Buffering - Specification of Tokens.

UNIT II SYNTAX ANALYSIS 9

Role of the parser -Writing Grammars -Context-Free Grammars - Top Down parsing - recursive Descent Parsing - Predictive Parsing - Bottom-up parsing - Shift Reduce Parsing - Operator Precedent Parsing - LR Parsers - SLR Parser - Canonical LR Parser - LALR Parser.

UNIT III INTERMEDIATE CODE GENERATION 9

Intermediate languages - Declarations - Assignment Statements - Boolean Expressions - Case Statements - Back patching - Procedure calls.

UNIT IV CODE GENERATION 9

Issues in the design of code generator - The target machine - Runtime Storage management - Basic Blocks and Flow Graphs - Next-use Information - A simple Code generator - DAG representation of Basic Blocks - Peephole Optimization.

UNIT V CODE OPTIMIZATION AND RUN TIME ENVIRONMENTS 9

Introduction- Principal Sources of Optimization - Optimization of basic Blocks - Introduction to Global Data Flow Analysis - Runtime Environments - Source Language issues - Storage Organization - Storage Allocation strategies - Access to non-local names - Parameter Passing.

Total Periods : 45

REFERENCES :

1. Alfred Aho, Ravi Sethi, Jeffrey D Ullman, "Compilers Principles, Techniques and Tools", Pearson Education Asia, 2003.
2. Allen I. Holub "Compiler Design in C", Prentice Hall of India, 2003.
3. C. N. Fischer and R. J. LeBlanc, "Crafting a compiler with C", Benjamin Cummings,2003.
4. J.P. Bennet, "Introduction to Compiler Techniques", Second Edition, Tata McGraw-Hill, 2003.

BC1521 - MULTIMEDIA SYSTEMS LAB

L T P C
0 0 3 1

1. Create a simple painting program using Flash or equivalent.
2. Create a simple animated banner using Flash or equivalent.
3. Design an object dragging program.
4. Prepare a photo album using Flash or equivalent.
5. Create animated buttons which is used for web design using Adobe Photoshop or equivalent.
6. Design image mapping using Flash or equivalent.
7. Create image morphing using adobe Photoshop or equivalent.
8. Make animations using macromedia Flash or equivalent.
9. Create animated Gifs for use as banners, titles and buttons.
10. Create short film in Flash or equivalent using any theme.
11. To perform animation using any animation software.
12. To perform image editing using basic tool, masking effect and rendering effects using Photoshop or equivalent.

Total Periods: 45

BC1522 - INTERNET PROGRAMMING LAB

L T P C
0 0 3 1

LIST OF EXPERIMENTS

1. Write programs in Java to demonstrate the use of following components Text fields, buttons, Scrollbar, Choice, List and Check box
2. Write Java programs to demonstrate the use of various Layouts like Flow Layout, Border Layout, Grid layout, Grid bag layout and card layout
3. Write programs in Java to create applets incorporating the following features:
 - a) Create a color palette with matrix of buttons
 - b) Set background and foreground of the control text area by selecting a color from color palette.
 - c) In order to select Foreground or background use check box control as radio buttons
 - d) To set background images
4. Write programs in Java to do the following.
 - a) Set the URL of another server.
 - b) Download the homepage of the server.

- c) Display the contents of home page with date, content type, and Expiration date. Last modified and length of the home page.
- 5. Write programs in Java using sockets to implement the following:
 - a) HTTP request
 - b) FTP
 - c) SMTP
 - d) POP3
- 6. Write a program in Java for creating simple chat application with datagram sockets and Datagram packets.
- 7. Write programs in Java using Servlets:
 - a) To invoke servlets from HTML forms
 - b) To invoke servlets from Applets
- 8. Write programs in Java to create three-tier applications using servlets
 - a) To conduct an on-line examination.
 - b) To display student mark list. Assume that student information is available in a database which has been stored in a database server.
- 9. Create a web page with the following using HTML
 - a) To embed a map in a web page
 - b) To fix the hot spots in that map
 - c) Show all the related information when the hot spots are clicked.
- 10. Create a web page with the following.
 - a) Cascading style sheets.
 - b) Embedded style sheets.
 - c) Inline style sheets.
 - d) Use your college information for the web pages.

Total Periods: 45

BC1523 - COMPILER DESIGN LAB

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1. Implement a lexical analyzer in "C".
2. Use LEX tool to implement a lexical analyzer.
3. Implement a recursive descent parser for an expression grammar that generates arithmetic expressions with digits, + and *.
4. Use YACC and LEX to implement a parser for the same grammar as given in problem
5. Write semantic rules to the YACC program in problem 5 and implement a calculator that takes an expression with digits, + and * and computes and prints its value.
6. Implement the front end of a compiler that generates the three address code for a simple language with: one data type integer, arithmetic operators, relational operators, variable declaration statement, one conditional construct, one iterative construct and assignment statement.
7. Implement the back end of the compiler which takes the three address code generated in problems 7 and 8, and produces the 8086 assembly language instructions that can be assembled and run using a 8086 assembler. The target assembly instructions can be simple move, add, sub, jump. Also simple addressing modes are used.

Total Periods: 45

SEMESTER VI
BC1601 - CRYPTOGRAPHY AND NETWORK SECURITY

L T P C
3 0 0 3

UNIT I INTRODUCTION **9**

OSI Security Architecture - Classical Encryption techniques - Cipher Principles - Data Encryption Standard - Block Cipher Design Principles and Modes of Operation - Evaluation criteria for AES - AES Cipher - Triple DES - Placement of Encryption Function - Traffic Confidentiality

UNIT II PUBLIC KEY CRYPTOGRAPHY **9**

Key Management - Diffie-Hellman key Exchange - Elliptic Curve Architecture and Cryptography- Introduction to Number Theory - Confidentiality using Symmetric Encryption - Public Key Cryptography and RSA.

UNIT III AUTHENTICATION AND HASH FUNCTION **9**

Authentication requirements - Authentication functions - Message Authentication Codes - Hash Functions - Security of Hash Functions and MACs - MD5 message Digest algorithm - Secure Hash Algorithm - RIPEMD - HMAC Digital Signatures - Authentication Protocols - Digital Signature Standard

UNIT IV NETWORK SECURITY **9**

Authentication Applications: Kerberos - X.509 Authentication Service - Electronic Mail Security - PGP - S/MIME - IP Security - Web Security.

UNIT V SYSTEM LEVEL SECURITY **9**

Intrusion detection - password management - Viruses and related Threats - Virus Counter measures - Firewall Design Principles - Trusted Systems.

Total Periods: 45

REFERENCES :

1. William Stallings, "Cryptography And Network Security - Principles and Practices", Prentice Hall of India, Third Edition, 2003.
2. Bruce Schneier, "Applied Cryptography", John Wiley & Sons Inc, 2001.
3. Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, 2003.
4. Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", Third Edition, Pearson Education, 2003.

BC1602 - DATA WAREHOUSING AND DATA MINING

L T P C
3 0 2 4

UNIT I INTRODUCTION TO DATA WAREHOUSING 9

Introduction, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation, Further Development, Data Warehousing to Data Mining

UNIT II DATA PREPROCESSING, LANGUAGE, ARCHITECTURES, CONCEPT DESCRIPTION 9

Why Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.

UNIT III ASSOCIATION RULES 9

Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases.

UNIT IV CLASSIFICATION AND CLUSTERING 9

Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Other Classification Methods, Prediction, Classifier Accuracy, Cluster Analysis, Types of data, Categorisation of methods, Partitioning methods, Outlier Analysis.

UNIT V RECENT TRENDS 9

Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, World Wide Web, Applications and Trends in Data Mining

Total Periods: 45

REFERENCES :

1. J. Han, M. Kamber, "Data Mining: Concepts and Techniques", Harcourt India / Morgan Kauffman, 2001.
2. Margaret H. Dunham, "Data Mining: Introductory and Advanced Topics", Pearson Education 2004.
3. Sam Anahory, Dennis Murry, "Data Warehousing in the real world", Pearson Education 2003.
4. David Hand, Heikki Manila, Padhraic Symth, "Principles of Data Mining", PHI 2004.
5. W.H. Inmon, "Building the Data Warehouse", 3rd Edition, Wiley, 2003.
6. Alex Bizon, Stephen J. Smith, "Data Warehousing, Data Mining & OLAP", McGraw- Hill Edition, 2001.
7. Paulraj Ponniah, "Data Warehousing Fundamentals", Wiley-Interscience Publication, 2003.

BC1621 - WEB APPLICATION LABORATORY

L T P C
0 0 3 1

1. Create a simple page introducing yourself how old you are, what you do, what you like and dislike. Modify the introduction to include a bullet list of what you do and put list the 5 things you like most and dislike as numbered lists. Create another page about your favourite hobby, and link it to (and from) your main page. Centre something, and put a quote on one of your pages
2. Put an existing image on a web page. Create a table, use a heading and at least one use of row span/column span. Colour a page and some text within the page. Link to another site
3. Create a new file called index. html.
 - * Put the normal HTML document structure tags in the file.
 - * Give it a title.
 - * At the bottom of the page (i.e. the last thing between the body tags) put the following:
 - * A horizontal rule.
 - * A link to your email address (with your name between the tag); remember to put the link to your email address within address tags.
 - * A line break.
 - * The date. (I have this same structure at the bottom of this page).
 - * Above this block (which is called the footer), put a title in heading tags.
 - * Add some text describing yourself (you can split this into multiple headings and paragraphs if you wish
4. Write a script to create an array of 10 elements and display its contents.
5. Write a function in Javascript that takes a string and looks at it character by character.
6. Create a simple calculator using form fields. Have two fields for number entry & one field for the result. Allow the user to be able to use plus, minus, multiply & divide.
7. Create a document and add a link to it. When the user moves the mouse over the link, it should load the linked document on it's own. (User is not required to click on the link).
8. Create a document, which opens a new window without a toolbar, address bar, or a status bar that unloads itself after one minute.
9. Create a document that accepts the user's name in a text field form and displays the same the next time when the user visits the site informing him that he has accessed the site for the second time, and so on.
10. Create a Web form for an online library. This form must be able to accept the Membership Id of the person borrowing a book, the name and ID of the book, and the name of the book's author. On submitting the form, the user (the person borrowing the book) must be thanked and informed of the date when the book is to be returned, You can enhance the look of the page by using various ASPNET controls.

11. Display an advertisement at the bottom of the Web form that you created in question 10.
12. Create an array containing the titles of five new movies. Use this array as a data source for a drop down list control. The page must be capable of displaying the selected movie title to the user when the user clicks on the submit button.
13. Create a virtual directory in uS. Create a global.asax file and include the 'Session_Start' and 'Session_End' and, 'Application_BeginRequest' and 'Application_EndRequest' events. Write a simple ASP.NET page and execute it in the browser.

Total Periods : 45

**LIST OF ELECTIVES
BC1603 - INFORMATION SECURITY**

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

UNIT I INTRODUCTION	9
History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC	
UNIT II SECURITY INVESTIGATION	9
Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues	
UNIT III SECURITY ANALYSIS	9
Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk	
UNIT IV LOGICAL DESIGN	9
Blueprint for Security, Information Security Policy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity	
UNIT V PHYSICAL DESIGN	9
Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel	

Total Periods: 45

REFERENCES :

1. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Vikas Publishing House, New Delhi, 2003
2. Micki Krause, Harold F. Tipton, " Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004.
3. Stuart Mc Clure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw-Hill, 2003
4. Matt Bishop, "Computer Security Art and Science", Pearson/PHI, 2002.

BC1604 - MANAGEMENT INFORMATION SYSTEMS

L T P C
3 0 0 3

UNIT I INFORMATION SYSTEM AND ORGANIZATION 9

Matching the Information System Plan to the Organizational Strategic Plan - Identifying Key Organizational Objective and Processes and Developing an Information System Development - User role in Systems Development Process - Maintainability and Recoverability in System Design.

UNIT II REPRESENTATION AND ANALYSIS OF SYSTEM STRUCTURE 9

Models for Representing Systems: Mathematical, Graphical and Hierarchical (Organization Chart, Tree Diagram) - Information Flow - Process Flow - Methods and Heuristics - Decomposition and Aggregation - Information Architecture - Application of System Representation to Case Studies.

UNIT III SYSTEMS, INFORMATION AND DECISION THEORY 9

Information Theory - Information Content and Redundancy - Classification and Compression - Summarizing and Filtering - Inferences and Uncertainty - Identifying Information needed to Support Decision Making - Human Factors - Problem characteristics and Information System Capabilities in Decision Making.

UNIT IV INFORMATION SYSTEM APPLICATION 9

Transaction Processing Applications - Basic Accounting Application - Applications for Budgeting and Planning - Other use of Information Technology: Automation - Word Processing -Electronic Mail - Evaluation Remote Conferencing and Graphics - System and Selection - Cost Benefit - Centralized versus Decentralized Allocation Mechanism.

UNIT V DEVELOPMENT AND MAINTENANCE OF INFORMATION SYSTEMS 9

Systems analysis and design - System development life cycle - Limitation - End User Development - Managing End Users - off- the shelf software packages - Outsourcing - Comparison of different methodologies.

Total Periods : 45

REFERENCES :

1. Laudon K.C, Laudon J.P, Brabston M.E, "Management Information Systems - Managing the digital firm", Pearson Education, 2004.
2. Turban E.F, Potter R.E, "Introduction to Information Technology"; Wiley, 2004.
3. Jeffrey A.Hoffer, Joey F.George, Joseph S. Valachich, "Modern Systems Analysisand Design", Third Edition, Prentice Hall, 2002.

BC1605 - ADVANCED COMPUTER ARCHITECTURE

L T P C
3 0 0 3

UNIT I INTRODUCTION

9

Fundamentals of Computer Design - Measuring and reporting performance - Quantitative principles of computer design. Instruction set principles - Classifying ISA - Design issues. Pipelining - Basic concepts - Hazards - Implementation - Multicycle operations.

UNIT II INSTRUCTION LEVEL PARALLELISM WITH DYNAMIC APPROACHES

9

Concepts - Dynamic Scheduling - Dynamic hardware prediction - Multiple issue - Hardware based speculation - Limitations of ILP.

UNIT III INSTRUCTION LEVEL PARALLELISM WITH SOFTWARE APPROACHES

9

Compiler techniques for exposing ILP - Static branch prediction - VLIW - Advanced compiler support - Hardware support for exposing more parallelism - Hardware versus software speculation mechanisms.

UNIT IV MEMORY AND I/O

9

Cache performance - Reducing cache miss penalty and miss rate - Reducing hit time - Main memory and performance - Memory technology. Types of storage devices - Buses - RAID - Reliability, availability and dependability - I/O performance measures - Designing an I/O system.

UNIT V MULTIPROCESSORS AND THREAD LEVEL PARALLELISM

9

Symmetric and distributed shared memory architectures - Performance issues - Synchronization - Models of memory consistency - Multithreading.

Total Periods: 45

REFERENCES :

1. John L. Hennessey and David A. Patterson, "Computer Architecture: A Quantitative Approach", Morgan Kaufmann, 2003, Third Edition.
2. D.Sima, T.Fountain and P.Kacsuk, "Advanced Computer Architectures: A Design Space Approach", Addison Wesley, 2000.
3. Kai Hwang and Zhi.Wei Xu, "Scalable Parallel Computing", Tata McGraw-Hill, New Delhi, 2003.

BC1606 -ADVANCED OPERATING SYSTEMS

L T P C
3 0 0 3

UNIT I INTRODUCTION

9

Architectures of Distributed Systems - System Architecture types - issues in distributed operating systems - communication networks - communication primitives. Theoretical Foundations -inherent limitations of a distributed system - lamp ports logical clocks - vector clocks - casual ordering of messages - global state - cuts of a distributed computation - termination detection. Distributed Mutual Exclusion - introduction - the classification of mutual exclusion and associated algorithms - a comparative performance analysis.

UNIT II DISTRIBUTED SYSTEM

9

Distributed Deadlock Detection -Introduction - deadlock handling strategies in distributed systems - issues in deadlock detection and resolution - control organizations for distributed deadlock detection - centralized and distributed deadlock detection algorithms -hierarchical deadlock detection algorithms. Agreement protocols - introduction-the system model, a classification of agreement problems, solutions to the Byzantine agreement problem, applications of agreement algorithms. Distributed resource management: introduction architecture- mechanism for building distributed file systems - design issues - log structured file systems.

UNIT III MEMORY ARCHITECTURE

9

Distributed shared memory-Architecture- algorithms for implementing DSM - memory coherence and protocols - design issues. Distributed Scheduling - introduction - issues in load distributing - components of a load distributing algorithm - stability - load distributing algorithm -performance comparison - selecting a suitable load sharing algorithm - requirements for load distributing -task migration and associated issues. Failure Recovery and Fault tolerance: introduction- basic concepts - classification of failures - backward and forward error recovery, backward error recovery- recovery in concurrent systems - consistent set of check points - synchronous and asynchronous check pointing and recovery - check pointing for distributed database systems recovery in replicated distributed databases.

UNIT IV DATA SECURITY

9

Protection and security -preliminaries, the access matrix model and its implementations.-safety in matrix model- advanced models of protection. Data security - cryptography: Model of cryptography, conventional cryptography- modern cryptography, private key cryptography, data encryption standard- public key cryptography - multiple encryptions - authentication in distributed systems.

UNIT V MULTIPROCESSOR OPERATING SYSTEM

9

Multiprocessor operating systems - basic multiprocessor system architectures - inter connection networks for multiprocessor systems - caching - hypercube architecture. Multiprocessor Operating System - structures of multiprocessor operating system, operating system design issues- threads- process synchronization and scheduling. Database Operating systems :Introduction- requirements of a database operating system Concurrency control : theoretical aspects - introduction,

database systems - a concurrency control model of database systems the problem of concurrency control - serializability theory- distributed database systems, concurrency control algorithms - introduction, basic synchronization primitives, lock based algorithms-timestamp based algorithms, optimistic algorithms - concurrency control algorithms, data replication.

Total Periods: 45

REFERENCES :

1. Mukesh Singhal, Niranjana G. Shivaratri, "Advanced concepts in operating systems: Distributed, Database and multiprocessor operating systems", TMH, 2001
2. Andrew S. Tanenbaum, "Modern operating system", PHI, 2003
3. Pradeep K. Sinha, "Distributed operating system-Concepts and design", PHI, 2003.
4. Andrew S. Tanenbaum, "Distributed operating system", Pearson education, 2003.

BC1607 - CLIENT SERVER COMPUTING

L T P C
3 0 0 3

UNIT I INTRODUCTION

9

Client Server Computing era, Real Client/Server, Fat Servers or fat clients, 2 tier Vs 2 tier, Intergalactic client server, client server for different models, building blocks

UNIT II CLIENT/SERVER OPERATION SYSTEMS

9

Anatomy of Server programs, Server needs from OS, Server scalability, Client anatomy, Client needs from OS, Client OS trends, MAC OS, Linux OS, Win OS, Server OS trends, NetWare, Win2000 Server, OS/2 warp server.

UNIT III CLIENT SERVER MIDDLEWARE

9

NOS 0Middleware, global directory services, X.500, LDAP, distributed time services, distributed security services, RPC messaging and peer to peer, Sockets, NetWare, NetBIOS, remote procedure call, messaging and queuing, MOM Vs RPC, Evolution of the NOS, DCE, The enterprise NOS, the internet as NOS

UNIT IV CLIENT SERVER TRANSACTION PROCESSING

9

ACID properties, Transaction Models, TP Monitor, TP Monitor and OS, TP Monitor and Transaction Management, TP Monitor Client/ Server Interaction types, Transactional RPC, Queues, TP Lite or TP Heavy, TP Lite versus TP Heavy - Managing Heterogeneous networks, Process Management, client/ server invocations, Performance

UNIT V CLIENT SERVER AND INTERNET

9

Client server and internet, Web client server, 3 tier client server web style, CGI, the server side of web, CGI and State, SQL database servers, Middleware and federated databases, data warehouses, EIS/DSS to data mining, GroupWare Server, what is GroupWare, components of GroupWare.

Total Periods: 45

REFERENCES:

1. Robert Orfali, Dan Harkey & Jeri Edwards, "Essential Client/Server Survival Guide', second edition, John Wiley & Sons, Singapore, 2003
2. James E. Goldman, Phillip T. Rawles, Julie R. Mariga, " Client/Server Information Systems, A Business Oriented Aproach", John Wiley & Sons, Singapore, 2000.
3. Eric J Johnson, " A complete guide to Client/Server Computing", first edition, Prentice Hall, New Delhi, 2001.
4. Smith & Guengerich, "Client/Server Computing", Prentice Hall, New Delhi, 2002.

BC1608 - BUSINESS DATA PROCESSING

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UNIT I INTRODUCTION 9

Organizational behaviour- Foundations of Individual behaviour-Perception and Individual decision making-values, attitude and job satisfaction.

UNIT II GROUPS IN ORGANISATION 9

Foundations of group behaviour- Understanding work teams- Communication - Leadership.

UNIT III ORGANISATION SYSTEM 9

Foundations of organization structure - Technology - Work design and stress - Human resource policies and practices - Organisational Culture.

UNIT IV BUSINESS PROCESS RE-ENGINEERING AND IT 9

Basic concepts and the need for BPR-Principles of BPR and the role of IT- BPR and restructuring the organization.

UNIT V NETWORK ORGANIZATION 9

Networked organization- virtual corporations.

Total Periods: 45

REFERENCES :

1. Stephen P.Robbins "Organizational behaviour", PHI, 12th edition, 2006.
2. Turban,Mclean,wetherbe,"Information Technology for management" John Wiley and Sons, 2001.
3. Ravi Kalakota and Marcia Robinson, "E-Business; Roadmap for Success; Pearson Education, 2000.
4. Vikram Sethi & William R King, "Organizational transformation through business process reengineering", Pearson education, 2006.

BC1609 - PC TESTING AND TROUBLE SHOOTING

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UNIT I INTRODUCTION

9

PC Hardware Introduction and Overview : Personal computing History, Types of systems, Documentation - Technical Reference Manuals - Hardware Maintenance Manuals. System Teardown and Inspection : Hand Tools, Soldering and De soldering Tools, Loop Back Connectors, Meters, Logic Probes and Logic Pulsers, Outlet Tester and Chemicals, Disassembly Procedures.

UNIT II COMPONENTS

9

Primary System Components : Types of Motherboards, ROM BIOS Compatibility. Bus Slots and I/O Cards. The Processor Bus, the Memory Bus and the Address Bus, Expansion Slots. Types of I/O Buses : The ISA Bus, EISA Bus, VESA Bus and PCI Bus. I/O port Addresses and DMA Channels. PC System Memory : Base Memory, Upper Memory Area, Extended Memory, Expanded Memory, Total Installed Memory Versus Total Usable Memory. Physical Memory and Testing Memory.

UNIT III FLOPPY DISK

9

Floppy Disk Drives : Types of Floppy Drives, Handling Recording Problems, Analysis Floppy Disk Construction, Drive Installation Procedure Trouble Shooting and Correcting Problems, Repairing Floppy Drives. Hard Disk Drives : Hard disk Interfaces and Installation procedure Hard Disk Trouble Shooting and Repair.

UNIT IV SYSTEM MAINTENANCE

9

System Assembly and Maintenance : System upgrades - Upgrades system Memory, Speeding up a system, upgrading the DOS Version. Preventive Maintenance : Active and Passive Preventive Maintenance Procedure - Power - Protection Systems - Surge suppressions, Phone line surge protectors, Line conditioners, Backup Power, dedicated data backup hardware.

UNIT V SOFTWARE AND HARDWARE

9

Software and Hardware Diagnostic Tools: The power On self test (POST), General purpose Diagnostic Programs - AMI Diag, Checkit Pro-Norton Diagnostics, Qaplus, Norton utilities, Anti- Virus Tools. Operating System and Trouble Shooting : DOS Components, The Basic process, How DOS Loads and starts, File Management, DOS File spared allocation, The DEBUG Program, Memory Resident Software Conflicts.

Total Periods : 45

REFERENCES :

1. Scott Mueller "Upgrading and Repairing PCs", 14th Edition, Pearson Education, New Delhi, 2002.
2. Govindaraju B. "IBM PC and Clones : Hardware, Trouble Shooting and Maintenance", 2nd Edition, Tata McGraw Hill Pub. Co., New Delhi, 2002.

BC1610 - SOFTWARE TESTING

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UNIT I INTRODUCTION

8

Testing as an Engineering Activity - Testing as a Process - testing axioms - Basic Definitions - Software Testing Principles - The Tester's Role in a Software Development Organization - Origins of Defects - cost of defects - Defect Classes - The Defect Repository and Test Design - Defect Examples - Developer/Tester Support for Developing a Defect Repository - Defect Prevention Strategies

UNIT II TEST CASE DESIGN

11

Test Case Design Strategies - Using Black Box Approach to Test Case Design - Random Testing - Requirements based testing - Boundary Value Analysis - Decision tables - Equivalence Class Partitioning - State-based testing - Cause-effect graphing - Error guessing - Compatibility testing - User documentation testing - Domain testing Using White Box Approach to Test design - Test Adequacy Criteria - static testing vs. structural testing - code functional testing - Coverage and Control Flow Graphs - Covering Code Logic - Paths - Their Role in White-box Based Test Design - code complexity testing - Evaluating Test Adequacy Criteria.

UNIT III LEVELS OF TESTING

9

The Need for Levels of Testing - Unit Test - Unit Test Planning - Designing the Unit Tests - The Test Harness - Running the Unit tests and Recording results - Integration tests - Designing Integration Tests - Integration Test Planning - Scenario testing - Defect bash elimination System Testing - Acceptance testing - Performance testing - Regression Testing - Internationalization testing - Ad-hoc testing - Alpha , Beta Tests - testing OO systems - stability and Accessibility testing - Configuration testing - Compatibility testing - Testing the documentation - Website testing

UNIT IV TEST MANAGEMENT

9

People and organizational issues in testing - organization structures for testing teams - testing services - Test Planning - Test Plan Components - Test Plan Attachments - Locating Test Items - test management - test process - Reporting Test Results - The role of three groups in Test Planning and Policy Development - Introducing the test specialist - Skills needed by a test specialist - Building a Testing Group.

UNIT V TEST AUTOMATION

8

Software test automation - skills needed for automation - scope of automation - design and architecture for automation - requirements for a test tool - challenges in automation - Test metrics and measurements - project, progress and productivity metrics

Total Periods: 45

REFERENCES:

1. Srinivasan Desikan and Gopaldaswamy Ramesh, " Software Testing - Principles and Practices", Pearson education, 2006.
2. Ilene Burnstein, "Practical Software Testing", Springer International Edition, 2003.
3. Ron Patton, " Software Testing", Second Edition, Sams Publishing, Pearson education, 2007
4. Renu Rajani, Pradeep Oak, "Software Testing - Effective Methods, Tools and Techniques", Tata McGraw Hill, 2004
5. Aditya P. Mathur, "Foundations of Software Testing - Fundamental algorithms and techniques", Dorling Kindersley (India) Pvt. Ltd., Pearson Education, 2008

BC1611- ARTIFICIAL INTELLIGENCE

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UNIT I INTRODUCTION

9

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

9

Informed search and exploration - 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 for CSP - 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

9

First order logic - representation revisited - Syntax and semantics for first order logic - Using first order logic - Knowledge engineering in first order logic - Inference in First order logic - prepositional 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**9**

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 Periods : 45**REFERENSES :**

1. Stuart Russell, Peter Norvig, "Artificial Intelligence - A Modern Approach", 2nd Edition, Pearson Education / Prentice Hall of India, 2004.
2. Nils J. Nilsson, "Artificial Intelligence: A new Synthesis", Harcourt Asia Pvt. Ltd., 2000.
3. Elaine Rich and Kevin Knight, "Artificial Intelligence", 2nd Edition, Tata McGraw- Hill, 2003.

BC1612 - SOFTWARE PROJECT MANAGEMENT

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UNIT I INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT**9**

Project Definition - Contract Management - Activities Covered by Software Project Management - Overview Of Project Planning - Stepwise Project Planning.

UNIT II PROJECT EVALUATION**9**

Strategic Assessment - Technical Assessment - Cost Benefit Analysis - Cash Flow Forecasting- Cost Benefit Evaluation Techniques - Risk Evaluation. - software effort Estimation

UNIT III ACTIVITY PLANNING**9**

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

UNIT IV MONITORING AND CONTROL**9**

Resource allocation - identifying and scheduling resources - publishing resource and cost schedule - scheduling sequence - Creating Framework - Collecting The Data - Visualizing Progress - Cost Monitoring - Earned Value - Prioritizing Monitoring - Getting Project Back To Target - Change Control - Managing Contracts - Introduction - Types Of Contract - Stages In Contract Placement - Typical Terms Of A Contract - Contract Management - Acceptance.

UNIT V MANAGING PEOPLE AND ORGANIZING TEAMS**9**

Introduction - Understanding Behavior - Organizational Behavior - Selecting The Right Person For The Job - Instruction In The Best Methods - Motivation - The Oldman - Hackman Job Characteristics

Model - Working In Groups - Becoming A Team - Decision Making - Leadership - Organizational Structures - Stress - Health and Safety - Case Studies.

Total Periods: 45

REFERENCES:

1. Bob Hughes, Mikecotterell, "Software Project Management", Third Edition, Tata McGraw Hill, 2004.
2. Ramesh, Gopaldaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.
3. Royce, "Software Project Management", Pearson Education, 1999.
4. Jalote, "Software Project Management in Practice", Pearson Education, 2002.
5. Robert T. Futrell, Donald F. Shefer and Linda I. Shefer, "Quality Software Project Management", Pearson Education, 2003.

BC1613 - ELECTRONIC COMMERCE

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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 - Non repudiation 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 - Info Haus - Security Considerations - Cyber Cash: Model - Security - Customer Protection - Client Application - Selling through Cyber Cash.

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 Periods : 45

REFERENCES

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

BC1614 - ENTERPRISE RESOURCE PLANNING

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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 ADVANTAGES 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 Periods : 45

REFERENCES:

1. Vinod Kumar Garg and N.K.Venkita Krishnan, "Enterprise Resource Planning - Concepts and Practice", PHI, 1998.
2. Jose Antonio Fernandz, "The SAP R/3 Handbook", TMH, 1998.