



1-48

VEER KUNWAR SINGH UNIVERSITY, ARA
Rules, Regulation and Course Structure
for
(BCA) BACHELOR OF COMPUTER APPLICATION
ACADEMIC SESSION : 2004-2007

1. Introduction

(i) The name of programme shall be **(BCA) Bachelor of Computer Application Integrated**. The course shall cover a period of three academic years and shall be divided into **6 semesters** of six months each. First cycle will run from **July to December** and Second cycle will be from **January to June** per academic year. The final University examination shall be held in the month of **December & June** per academic year.

(ii) The BCA Integrated programme will be of full-time three years "**Degree**" course of Computer Applications.

(iii) Ordinarily, in each class, not more than **60 students** will be admitted.

2. ELIGIBILITY :

Admission to the 1st semester BCA course shall be open to the candidates who have passed 10+2/ Intermediate/ Senior school certificate examination accepted as equivalent there to by the Academic council of V.K.S. University, Ara with Mathematics / Business Mathematics / Statistics / Physics / Computer Science / Computer Application as one of the subjects of study.

3. SELECTION

The selection methodology shall comprise written entrance test and personal interview. Candidates fulfilling an eligibility shall appear in the entrance test organised in the month of May in each academic year. The merit list shall be prepared by the admission committee of the college. The reservation policy for ST, SC, OBC shall be followed as per Govt. rulings. Written entrance test will consist of objective questions in maths, general knowledge and reasoning for 100 marks and of duration two hrs.

4. ENROLMENT :The successful candidates in the Common Admission Test will be enrolled in the BCA course strictly on the merit basis. As students

enrolled in these courses are required continuing participation, fulfillment of attendance requirements, full payments of course fee and adherence to rules and regulations of the college and university. Any variation in the above matters without the proper approval of the college authorities may invite annulment of enrolment.

5. REGISTRATION :

The enrolled regular students of college will have to get registered with the Veer Kunwar Singh University, Ara On payment of requisite fee, however those who are already registered with the Veer Kunwar Singh University, Ara need not apply for it. The candidates coming from other universities will have to submit migration certificate from the previous university and they will have to deposit emigration fee also. The students who are not registered with the Veer Kunwar Singh University, Ara will not be allowed to appear in the University examination.

6. EXAMINATION

Students will have to appear at the University Examination at the end of Each Semester. The examination will be conducted by the Veer Kunwar Singh University, Ara.

7. ATTENDANCE POLICY :

Regular attendance in all classes, seminars, Internal Assessment test & Term Work, Group Discussion and any other academic curricular activities of the college is compulsory and a 100% attendance is desired. The students will have to fulfill the condition of **75 % attendance**, otherwise he/she will not be permitted to appear in any semester examination.

8. COURSE STRUCTURE

SEMESTER — I

Group A : Theory papers to be examined by university through examination conducted at the end of semester.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	1BCA1	Fundamentals of Computer	100	40
2.	1BCA2	PC Packages (Windows 98/XP, Word, Excel)	100	40
3.	1BCA3	Programming Logic & Design Techniques	100	40
4.	1BCA4	Programing in C	100	40
5.	1BCA5	Communicative English	100	40
Aggregate Marks			500	225

Group B : Practical & Continous Sessional work papers to be evaluated internally, however during computer Lab. test atleast two external university examiners must be present. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	1BCA 6	Internal Assessment & Term Work	100	45
2.	1BCA 7	Computer Lab -I	100	45
3.	1BCA 8	Professional Personality Skills	50	23
Aggregate Marks			250	113

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225

(b) Group B (Sessional Works) Full Marks : 250 Pass Marks : 113

Aggregate Marks of 1st Semester : 750 Pass Marks : 338

SEMESTER — II

Group A : Theory papers to be examined by university through examination conducted at the end of semester.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	2BCA1	Digital Computer Organisation	100	40
2.	2BCA2	Advanced Programming in C	100	40
3.	2BCA3	Fundamental Data structure	100	40
4.	2BCA4	Application Programming in Foxpro	100	40
5.	2BCA5	Financial Accounting	100	40
Aggregate Marks			500	225

Group B : Practical & Continuous Sessional work papers to be evaluated internally, however during computer lab test atleast two external university examiners must be present. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	2BCA 6	Internal Assessment & Term Work	100	45
2.	2BCA 7	Computer Lab - II	100	45
3.	2BCA 8	Summer Assignments	100	45
4.	2BCA 9	Professional Personality Skill	50	23
Aggregate Marks			350	158

- (a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225
 (b) Group B (Sessional Works) Full Marks : 350 Pass Marks : 158
Aggregate Marks of IInd Semester : 850 Pass Marks : 383

SEMESTER – III

Group A : Theory papers to be examined by university through examination conducted at the end of semester.

Sl. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	3BCA1	Information Technology trend	100	40
2.	3BCA2	GUI Programming in Visual Basic	100	40
3.	3BCA3	Database management system	100	40
4.	3BCA4	Computer Networking & LAN	100	40
5.	3BCA5	Management Skills	100	40
Aggregate Marks			500	225

Group B : Practical & Continuous Sessional work papers to be evaluated internally, however during computer lab test atleast two external university examiners must be present. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

Sl. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	3BCA 6	Internal Assessment & Term Work	100	45
2.	3BCA 7	Computer Lab -III	100	45
3.	3BCA 8	Professional Personality Skills	50	23
Aggregate Marks			250	113

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225

(b) Group B (Sessional Works) Full Marks : 250 Pass Marks : 113

Aggregate Marks of IIIrd Semester : 750 Pass Marks : 338

SEMESTER — IV

Group A : Theory papers to be examined by university through examination conducted at the end of semester.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	4BCA1	Operating Systems	100	40
2.	4BCA2	OOPS Programming in C**	100	40
3.	4BCA3	Internet & E-Commerce	100	40
4.	4BCA4	Linux Operating systems	100	40
5.	4BCA5	System Analysis & Data Processing	100	40
Aggregate Marks			500	225

Group B : Practical & Continous Sessional work papers to be evaluated internally, however during computer lab test atleast two external university examiners must be persent. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	4BCA 6	Internal Assessment & Term Work	100	45.
2.	4BCA 7	Computer Lab - IV	100	45
3.	4BCA 8	Minor Summer Assignment	100	45
4.	4BCA 9	Professional Personality Skills	50	23
Aggregate Marks			350	158

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225

(b) Group B (Sessional Works) Full Marks : 350 Pass Marks : 158

Aggregate Marks of IVth Semester : 850 Pass Marks : 383

SEMESTER — V

Group A : Theory papers to be examined by university through examination conducted at the end of semester.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	5BCA1	Component Architecture and Programming (COM, DCOM)	100	40
2.	5BCA2	Multimedia Tools & Applications	100	40
3.	5BCA3	Programming in JAVA	100	40
4.	5BCA4	Oracle RDBMS	100	40
5.	5BCA5	Computer Centre Management	100	40
Aggregate Marks			500	225

Group B : Practical & Continuous Sessional work papers to be evaluated internally, however during computer lab test atleast two external university examiners must be present. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	5BCA 6	Internal Assessment & Term Work	100	45
2.	5BCA 7	Computer Lab -V	100	45
3.	5BCA 8	Professional Personality Skills	50	23
Aggregate Marks			250	113

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225

(b) Group B (Sessional Works) Full Marks : 250 Pass Marks : 113

Aggregate Marks of Vth Semester : 750 Pass Marks : 338

SEMESTER — VI

This semester Comprises of only Major Project and Internal assessment & Term work both are to be evaluated internally in presence of atleast two external examiners of University

SL. NO.	SEMESTER & PAPER CODE	NAME OF SUBJECT	Full Marks	Pass Marks
1.	6BCA1	Major Project	500	225
2.	6BCA 2	Internal Assesment & Term work	100	45
Aggregate marks			600	270

Summary of Semesterwise distribution of Marks.

SEMESTERS	Group- A Theory Paper Examined by Univ.		Group- B Sessional Work Evaluated internally		Aggregate	
	F.M	P.M	F.M	P.M	F.M	P.M
I st	500	225	250	113	750	338
II nd	500	225	350	158	850	383
III rd	500	225	250	113	750	338
IV th	500	225	350	158	850	383
V th	500	225	250	113	750	338
VI th	Major Project —		500	225	600	270
	Internal Assessment & Term work —		100	45		
Grand Total					4550	2048

9. REGULATION FOR THE MODERATION OF UNIVERSITY RESULT :

- (i) The Semester examination for each theory papers (Group-A) will be for a duration of three hours. The maximum marks in each paper will be 100 and the minimum marks for a pass will be 40.
- (ii) For passing in the semester aggregate of marks must be at least 45% in theory and practical groups separately.
- (iii) For passing in each practical paper (Group-B) must be 45%.

(iv) **AWARD OF CLASS**

The class will be awarded on the basis of aggregate marks scored by the student i.e. out of 4550. provided he/she has passed in each individual entity of both Group-A & Group-B of BCA. Semester I, II, III, IV, V, VI.

Class

(i) Distinction	75% and above
(ii) First class	60% and above
(iii) Second class	45% and above

(V) MODULUS OPERANDI OF CARRY- OVER PAPERS

- (a) A Candidate fail in maximum 4 papers of 1st semester will be promoted to 2nd semester.
- (b) A candidate will be promoted from 2nd to 3rd semester even if he / she has not cleared maximum 4 papers of 1st and 2nd semester.
- (c) Promotion from 3rd to 4th semester will be allowed only if candidate has cleared all papers of 1st semester & has not cleared maximum 4 papers of 2nd & 3rd semester.
- (d) promotion from 4th to 5th semester will be allowed if a candidate has cleared all papers of 1st and 2nd semester but has not cleared maximum 4 papers of 3rd and 4th semester.
- (e) Promotion from 5th to 6th semester will be allowed only if a candidate has cleared all papers up to 5th semester.
- (f) To pass the BCA course, students will have to clear all the semesters within 6 years from the date of admission

(VI) **Evaluation of Internal Assessment & Term work, Professional personality skills and Summer Assignments.**

- (a) Students will have to appear at the Internal Assessment examination in each semester. The marks on Internal Assessment & term work, Professional

personality skills and summer Assignment will be awarded on the basis of class Assessment, attendance, Laboratory work report and over all behaviour and discipline of the students. The responsibility for evaluating Internal sessional work shall be that of a committee of teachers Constituted by the **Director / Principal / Head / Co-ordinator / Professor-In-Charge**. The marks shall be forwarded to university.

(b) For summer Assignment and Professional personality skill the marks will be based on assignment records / presentation style / participation in Internal academic curricular activities such as seminars, quiz, Group-Discussions, etc.

(c) During the sixth semester the students will have to present on scheduled date with 4 copies of project record in form of booklet & floppy / CD. The marks on project will be awarded on the basis of their project presentation and demonstration before the departmental committee and the external examiners of university.

(VIII) MAJOR PROJECT WORK :

Sixth semester comprises of only two papers

(i) 6BCA1- Major Project - F.M - 500

(ii) 6BCA2- Internal assesment & Term work - F.M - 100

(a) Project work may be done individually or in groups in case of bigger project of software development. However if project is done in a group, each student must be given a responsibility for a distinct module and care should be taken to see the progress of individual modules is independent of others.

(b) Students should take guidance from an internal guide and prepare a Project report on "Project work" in at least 4 typed copies of their project synopsis. A separate file, containing source-code, listings should also be submitted in floppy / CD's. The respective college should forward one copy of this synopsis to each of the external panel members in advance of the project viva date.

(c) The Project work should be of such a nature, that it could prove useful or be relevant from the Commercial / Management angles.

(d) The Project report shall be duly assessed by the internal guide of the subject and remark grade will be communicated by the Co-ordinator to the external examiner at the time of viva.

(e) The Project work carry **full marks : 500; pass Marks : 225 i.e. 45% of full Marks.**

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(f) The project report should be prepared in a format prescribed by the College which also specifies the contents and the methods of presentation.

(g) Project work should be aimed on development of software packages useful in automation of offices and organisational management, Computerisation of billing system, results, inventories etc. Project shall be carried out by the students in an industry, business establishments, Educational Organisations, Consultancies etc, Outside college with prior permission of the college. The Students will have to Report back to College periodically, to acknowledge about the development of their work to the internal guide.

(h) The Viva-Voice examination on Project report shall be conducted by minimum of two external examiners at the end of VIth semester.

10. PATTERN OF QUESTION FOR THEORY PAPERS

For each theory papers of 100 marks, 10 questions shall be given of 20 marks each, out of which candidate will have to answer 5 questions, one questions (preferably Q.No. -1) of 20 marks shall be of objective nature and shall be made compulsory. Written examination shall be of 3 hours duration

11. AWARD OF DEGREE

After Successful completion of the three years (Six Semesters) BCA Course, appropriate under graduate Degree in "BACHELOR OF COMPUTER APPLICATION" will be conferred on the examinee by the VEER KUNWAR SINGH UNIVERSITY, ARA.

12. MEDIUM OF INSTRUCTION

The medium of instruction will be English.

13. CLARIFICATION OF SYLLABUS :

It may be necessary to clarify certain points regarding the course. The syllabus committee, Academic Council Shall meet at least once in a year to study and clarify any difficulties from the colleges.

14. REVISION OF SYLLABUS

As the Computer Technology is changing very fast, revision of the syllabus should be considered every (3) three years.

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VEER KUNWAR SINGH UNIVERSITY, ARA

BACHELOR OF COMPUTER APPLICATION (BCA) DETAIL COURSE STRUCTURE & SYLLABUS SEMESTER — I

Group A : (Theory Group) Theory papers to be examined by university through examination conducted at the end of semester.7

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
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3.	1BCA3	Programming Logic & Design Techniques	100	40
4.	1BCA4	Programing in C	100	40
5.	1BCA5	Communicative English	100	40
Aggregate Marks			500	225

Group B : (Practical & Continuous Evaluation) Sessional work papers to be evaluated internally, however during computer Lab. test atleast two external university examiners must be present. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	1BCA 6	Internal Assessment & Term Work	100	45
2.	1BCA7	Computer Lab -I	100	45
3.	1BCA 8	Professional Personality Skill	50	23
Aggregate Marks			250	113

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225

(b) Group B (Sessional Works) Full Marks : 250 Pass Marks : 113

Aggregate Marks of Ist Semester : 750 Pass Marks : 338

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SEMESTER - I

		F.M	P.M	Time
1BCA1	Fundamental of Computer	100	40	3hrs.

MAJOR TOPICS :

1. Introduction
2. Classification of Computers.
3. Data Representation
4. Overview of Computer Architecture & Organisation
5. Overview of File System

UNIT 1. Introduction to Computers- Data • Information • Importance of Data and Information • Information Society and Information Economy • Computing Technology • Definition of Modern Day Computers • History of Computing (Napier's bone, pascal, difference engine etc.) • Common Application of Computers • Definition of Information System and Information Technology • Multimedia •

UNIT 2. Classification of Computers-Digital Vs Analog Computer • Generation of Computers • General Purpose vs Special Purpose Computers • Micro-Mini-Manifframe-Super-Computer • Single User-Multiuser System •

UNIT 3. Data Representation -Number System-Decimal Number System • 9's and 10's Complements • Binary Number System • Binary Arithmetic 1's and 2's Complements • Decimal to Binary Conversion • Binary to Decimal Conversion • Octal Numbers • Hexadecimal Numbers • Binary Coded Decimal System • Alphanumeric Code System (ASCII, EBCDIC) • Bit • Byte •

UNIT 4. Overview of Computer Architecture and Organization: Definition of Computer Architecture • Definition of Computer Organization • Structural Components of Computer System (CPU, Main Memory, I/O, System Interconnection) • Structural Components of CPU (CU, ALU, Registers, CPU Interconnection) • Basic Block diagram of Computer • Basic Functions of Computers (Data Processing, Data Storage, Data

Movement, Control) • Major Components of Computer System (Hardware, Software) • Application Software • System Software • Compiler and Interpreter and Assembler • Output devices- Monitor, Printer (Impact, Non-I al and Line, Dot Matrix, Laser, Drum and Chain Printers etc.) • Memory organization - registers, cache, Primary and Secondary Memory • Memory associated concepts-Tracks, Sectors, Seek time, Latency time Access time • Static RAM • Dynamic RAM • Input-Output Organization- Programed I/O, Interrupt driven I/O, DMA • Input. Devices - (Keyboard, Mouse, Joystick, Scanner, MICR, DMR, etc.) •

UNIT 5.Overview of File System in Computers.-Files • Directories • Types of Files • Commands • Internal and External Commands • Concepts of Path (Absolute & relative path) • File Management Commands of some common Operating Systems (Copy, Type, Xcopy, Edit, ls, cd, md, cat, vi etc.) •

REFERENCE BOOKS

- ✓ 1. Computer Today by S.K. Basndra Pub.Galgotia
- ✓ 2. Fundamentals of Information Technology. by Alexis Leon & mathew Leon, Pub. - Vikas Publication House, New Delhi
- ✓ 3. Computer Fundamentals by P.K.Sinha Pub. -BPB
- ✓ 4. Computer Fundamentals Architecture and Organisation by B. Ram Pub. Vikash Publication House New Delhi
- 5. Peter Norton's Dos Guide by Peter Norton pub. (Preutice Hall of India)

		F.M	P.M	Time
1BCA2	PC Packages (Win98/XP,Word,Excel)	100	40	3hrs.

MAJOR TOPICS :

- 1. Introduction to PC Application Package.
- 2. Graphical User Interface.

3. Windows Operating System.
4. Document Creation and Word Processing.
5. Spread Sheet.

UNIT 1. Introduction to PC Application Package-Definition and Example -
 Word Processing • Spreadsheet • DBMS • Presentation • CAD/CAM •
 Accounting •

UNIT 2. Graphical user interface-Operating System – an interface •
 command line user interface • Graphical User Interface • Graphical
 User Interface Components – Windows • Desktop • Icons • Types of
 Icons • Dialog Box • Menu • Command Button • Textbox • List Box •
 Radio/option Button • Check Box • Spinner • Scroll Bar • Combo Box •

UNIT 3. Windows Operating System-Different Versions/Types of Windows –
 Windows 3.1 • Windows 95 • Windows 98 • Windows Me • Windows
 NT • Windows 2000 • Windows XP • Basic Mouse Techniques – Click
 • Double Click • Point • Drag • Drag-and-Drop • Basic Keyboard
 Techniques - Closing window/application • Moving between open windows
 • Selecting an application • Tasking help • Menu and its •Convention
 – Dimmed Command • ellipsis • Check mark • short cut key to right
 a command • A triangle to the right of a command • Control Menu
 and its options – Restore • Move • Size • Minimize • Maximize • Close
 • Switch to • Navigating in a dialog box • Working with File Manager/
 Windows explorer • Creating files • Directories/folder • short cut •
 Searching for files and directories • Moving • Copying • Renaming
 files and directories • Associating files with applications • Formatting
 floppy Disk and Hard disk • Scandisk • Disk Defragmentation • Setting
 Desktop environments • Printing • Applets of windows - Notepad, Paint,
 Wordpad, Calculator, Character Map, Media Player, Users •

UNIT 4. Document Creation and word Processing-An Introduction to Word
 Processing • Opening and closing MS-Word • The Menu Bar • Tool
 Bar (Tool Buttons) • Opening • Closing • Saving documents • Page
 setup •

Display /Hiding of paragraph marks and Inter Word spaces • Formatting – Font, Size, Style, Color, Alignments, Indentation, Bullets and Numbering, Tab and tab setting, changing case • Handling Multiple documents – Opening and closing of multiple documents, cut, copy, and paste across the documents • saving the clip board • Moving around a document • Document template • Table Manipulation • Mail Merge • Macro • Printing •

UNIT 5.Spreadsheet-Opening Spreadsheet (Excel). The Menu bar • Tool bar • (Tool buttons) Context Sensitive help • Introduction to common applications associated with spreadsheet – Calculation of taxes • sales analysis • Financial A/c • Product Scheduling • Sale invoicing • Statistical Analysis and Budgeting • Concepts – Workbook • Worksheet • Cell • Cell Pointer • Cell address • Cell range • Moving around worksheet • Entering Data - Text • Numbers • Date Formula • Referencing - Relative • Absolute • Mixed • Editing • Specifying a Range • Formatting • Data fill • Sorting and Filtering • Form • Insertion of rows • Columns • Sheets • Changing width of rows and columns • Chart • Functions – Mathematical functions • logical Functions • Statistical Functions • String Functions • Financial Functions • Data base Functions • Date and Time Functions • Macro • Analysis tools – Goal seek • solver • scenario • Printing • Merging Cells •

REFERENCE BOOKS

✓ 1. Learning Windows 98 step by Step	By Rajeev Mathur	Pub. BPB
✓ 2. Learning Word 97 for Windows	by Rajeev Mathur	Pub. BPB
✓ 3. Learning excel 97 for Windows	by Rajeev Mathur	Pub. BPB
✓ 4. Windows 2000 : The Complete Reference	by Vens	Pub. TMH. ✓
5. Using Microsoft Office 2000	by Batt.	Pub PHI

		F.M	P.M	Time
1BCA3	Programming Logic & Design Techniques	100	40	3hrs.

MAJOR TOPICS :

1. Introduction.
2. Mathematical Preliminaries.

- 3. Algorithm Specification & Performance Analysis:
- 4. Programming Concepts
- 5. Software Development Methodology.

UNIT 1.Introduction-Origin and definition of the term "ALGORITHM" • Euclid's algorithm • Features of algorithm- finiteness, Definiteness, Input, Output, Effectiveness •

UNIT 2.Mathematical Preliminaries- Mathematical Induction • Numbers • Powers and Logarithms • Sum and Products • Integer Functions and Elementary Number Theory • Permutations and Factorials • Binomial Coefficients • Harmonic Numbers • Fibonacci Numbers • Matrices •

UNIT 3.Algorithm Specification & Performance Analysis-Pseudocode • Flowchart • Performance analysis-space complexity • Time complexity • Asymptotic Notation-Big "oh", Omega, Little Omega •

UNIT 4.Programming concepts-Programming Elements - Variable, Constant, Data Type, Array, Expression, Statements • Control Structure - Sequence • Selection • Iteration • Subroutines and Functions •

Unit 5.Software Development Methodology- Conventional Programming Technique- Structural Programming • Recursive Programming • Object Oriented Programming •

REFERENCE BOOKS

✓ 1. Fundamentals of Information Technology	by Alexis Leon & Mathew Leon	Pub. Vikas Publishing House, New Delhi
✓ 2. Programme design	by peter juliff	pub. PHI
✓ 3. 'O' Level Programming Concept & Systems	by V.K.Jain	pub BPB
✓ 4. How to Design programme - An Introduction to Programming and Computing	by Kelleison	pub. PHI
5. How to solve it by Computer	by dromy	Pub. PHI

		F.M	P.M	Time
1BCA4	Programming in C	100	40	3hrs.

MAJOR TOPICS :

1. Introduction of C Language.
2. C Vocabulary
3. Data Types
4. Control Structures
5. Array
6. Functions
7. Storage Class

Unit 1 : Introduction to C Language-

(a)History, Program development- Coding, Compilation, Linking, Running •

(b)Important features of C Language – structured programming- High/Middle/Low Level • Case sensitiveness • character set • block structure •

(c) Deferent version of C compilers •

Unit 2 : C Vocabulary- Keywords – Operators – Arithmetic, Logical etc• Operators precedence and associativity • Library Functions and their header files •

Unit 3 : Data Types – Kinds, Range and Size • Memory variables • constants • Basic data type modifiers •

Unit 4 : Control Structures- Control structure – if, switch, for, while, do-while •

Unit 5 : Array – 1D, 2D, 3D •

Unit 6 : Functions – Declaration, Definition, Calling, Making a library Functions •

Unit 7 : Storage Class- Storage class modifiers •

REFERENCE BOOKS

- ✓ 1. Progming in C
- ✓ 2. Programming with C
3. Thinking in C

By E. Balaguruswami
by Gottfried, Schaums outline series
by Mahaptra

pub. TMH
Pub TMH
Pub PHI

		E.M	P.M	Time
1BCA5	Communicative English	100	40	3hrs.

The main objective of this course is to improve proficiency in English by developing skills in reading, writing, listening, speaking and composition. The different kinds of composition included are – paragraphs, expository, composition, narrative composition descriptive composition, notes, reports and summaries.

Writing Skills :—

1. Business Letters (Correspondence)
2. Interpretation of various charts and graphs.
3. Vocabulary Building.
4. Paragraph Writing/Expansion of ideas/comprehension.
5. Reportage.

Speaking Skills :—

6. Basic Sentence Patterns.
7. Narrating Stories with the help of hints.
8. Describing some incidents (hints minimised)
9. Conversation, Debating, Group Discussion.
10. Extempore Topics for Speech.

REFERENCE BOOKS

- | | |
|------------------------------------|---|
| 1. English Grammar | by Rein & Martin |
| 2. Effective English Communication | by Mohan Krishna, Dr. Raman & Meekakshi
pub TMH. |
| 3. English Conversion Practice | By Dixon Pub. PHI |

SEMESTER — II

Group A : (THEORY GROUP) Theory papers to be examined by university through examination conducted at the end of semester.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	2BCA1	Digital Computer Organisation	100	40
2.	2BCA2	Advanced Programming in C	100	40
3.	2BCA3	Fundamental Data structure	100	40
4.	2BCA4	Application Programming in Foxpro	100	40
5.	2BCA5	Financial Accounting	100	40
Aggregate Marks			500	225

Group B : (Practical & Continuous Evaluation) Sessional work papers to be evaluated internally, however during computer lab test atleast two external university examiners must be present. Evaluated answer sheet and marks foil shall be forwarded

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	2BCA 6 _C	Internal Assessment & Term Work	100	45
2.	2BCA 7 _E	Computer Lab - II	100	45
3.	2BCA 8 _E	Summer Assignments	100	45
4.	2BCA 9 _E	Professional Personality Skill	50	23
Aggregate Marks			350	158

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225

(b) Group B (Sessional Works) Full Marks : 350 Pass Marks : 158

Aggregate Marks of IInd Semester : 850 Pass Marks : 383

SEMESTER II

		F.M	P.M	Time
2BCA1	Digital Computer Organisation	100	40	3hrs.

MAJOR TOPICS :

1. Introduction to Digital Computers.
2. Binary Numbers, Codes and arithmetic.
3. Digital systems algebra.
4. Combinational switching circuit.
5. Flip-Flops, Registers and counters.
6. Digital memory systems.
7. Basic machine organization.

Unit 1 : Introduction to digital computers-Digital Computer vs Analog Computer • Characteristics of Digital Computers •

Unit 2 : Binary Numbers, Codes and Arithmetic- Numbering system• conversion • Binary addition & subtraction • complement representation of numbers • Addition/Subtraction of numbers in one's complement notation • addition/subtraction of numbers in two's compliment notation • Binary Multiplication and division • Binary Coded Decimal Numbers • Floting point Arithmetic •

Unit 3 : Digital Systems Algebra-Postulates of Boolean Algebra • Basic theorems of Boolean Algebra • Boolean functions and truth tables • Different forms of boolean functions • Logic gates • Simplifying boolean functions • Logic gates • Simplifying boolean funtions• karnaugh map •

Unit 4 : Combinational Switching Circuit-Combinational circuit design procedure • Binary operators and logic gates • Integrated circuits and NAND - NOR Gates • Realization of Boolean expression with NAND Gates • Some common combinational circuits used in digital systems •

Unit 5 : Flip-Flop, Registers and Counters-Basic sequential circuit and types • Sequential circuits- Flip-Flops, counters, counter decoders•

controlled counters, shift registers, push-down stack, transfer of information between registers • single shot trigger •

Unit 6 : **Digital Memory Systems**-Memory parameters • characteristics of magnetic cores• semiconductor • random access memory • Read only memories • Content addressed memories •

Unit 7 : **Basic Machine Orgnaization**-Storage orgnaization• Instruction and data representation • CPU organization • I/O organization • Basic instruction set • base registers • Instruction formats •

REFERENCE BOOKS

- ✓1. Computer system and Architecture (3rd edition) by M. Mano Pub. PHI
- ✓2. Computer organisation & Design by Pal & p. chaudhari
- ✓3. Introduction to digital comoputer Design by V. Rajraman& Radhakrishnan
4. Computer organisation and Architecture: by W. Stalling
5. IBM PC and clon hardware Troubleshoooting & maintenance by Govind rajalu.

		F.M	P.M	Time
2BCA2	Advance Programming in C	100	40	3hrs.

MAJOR TOPICS :

1. Abstract Data Type
2. Pointers
3. Function Revisited
4. File Handling
5. Bitwise operations

Unit 1 : **Abstract data types** – structure & union •

Unit 2 : **Pointers**- Declaring pointer • Assigning address to a pointer • size of pointer • Types of pointers • pointers and array • string manipulation • Array of pointers •

Unit 3 : **Function Revisited**- Function Call – Recursion • Call by value and call by reference • variable number of arguments • command line arguments •

Unit 4 : **File Handling**- Opening, Closing, and Processing files using library functions •

Unit 5 : **Bitwise operators**- >>, <<, |, &, ~ and their applications •

REFERENCE BOOKS

- | | |
|-------------------------------------|---------------------------|
| ✓ 1 Turbo C- The Complete Reference | by H. Schildt. |
| ✓ 2. Programing in C | by S. Kochan |
| ✓ 3 C Programming | by Kernighan & Ritchi |
| 4. Spirit of C | by Moolish Kooper |
| ✓ 5 Application programming in C | by Johnson Baugh & Kalin. |

		F.M	P.M	Time
2BCA3	Fundamental Data Structure	100	40	3hrs.

MAJOR TOPICS :

1. INTRODUCTION TO DATA STRUCTURE
2. LIST
3. STACK
4. QUEUE
5. TREE

UNIT 1 : Introduction to Data Structure- Array- A Data Structure (concept) • Linear and Non-Linear Data-structure • Memory Allocation Technique- Static and Dynamic • Deallocation of Memory •

Unit 2 : List – sequential list, linked list • single, double and circular linked list • Insertion – Begining, Middle, End, Modification, Deletion, Searching, Traversing and Merging Link List • Representing polynomial equations using Linked List •

Unit 3 : Stack – sequential, linked, push, pop, display • Infix, post fix and pre fix notation of arithmetic expression using stack •

Unit 4 : Queue – sequential linked, Insertion, deletion and display •

Unit 5 : Tree – Sequential and linked representation • Binary search tree – insertion • Traversing (in order, pre order, post order) recursively and non-resursively • Deletion in B.S.T. • Concept – AVL tree, Threaded binary tree, B- tree • Representing arithmetic expression using binary tree •

REFERENCE BOOKS

- ✓ 1. Data Structure by Sahani
- ✓ 2. Data structure Through C by Y. Kanetkar
3. Data structure and programming Design in C 2nd Edition by Kruse Pub PII
- ✓ 4. Data structure Using C by Tenenbaum, Langsam & Augenstein Pub PII:

		F.M	P.M	Time
2BCA4	Application Programming in FoxPro	100	40	3hrs:

MAJOR TOPICS :

1. Introduction.
2. Foxpro Database Management Utilities.
3. Memory Variable Functions.
4. Programming & with Foxpro.
5. Exceptional Conditions.

Unit 1 : Introduction - Foxpro – An introduction • concept of DBMS and RDBMS • Files, Tables, Records, Fields •

Unit 2 : Foxpro Database Management Utilities- Foxpro Working Environments • Creating, Viewing, Editing & Deleting table structure and its contents • Sorting and indexing database files • Reports and labels •

Unit 3 : Memory Variable & Functions- Creating and using memory variables and arrays • Saving and Restoring memory variables • Setting Environments commands • Time and Date Functions • Mathematical commands and functions • Data type conversion functions • Macros • Character functions •

Unit 4 : Programming With Foxpro- Creating a program file • Performing input/output • Control structure- IF, SCAN, FOR, DO WHILE, TEXT • Following modular approach – Functions & Procedures • Programming with Multiple Data base Files • Programming with Multiple programme files in a project • Creating program interface – Boxes, Windows, Menus, and pop ups, Key trapping and manipulation • File Manipulation Functions •

Unit 5 : Exceptional Conditions-Different Error Conditions • Locating Errors • Common Error messages • Error debugging techniques*

REFERENCE BOOKS

- ✓ 1. FoxPro Made Simple by R. K. Taxali pub. BPB
- ✓ 2. Mastering FoxPro pub. BPB
- 3. FoxPro for Windows : inside and out by Jones pub. THM

		F.M	P.M	Time
2BCA5	Financial Accounting	100	40	3hrs.

MAJOR TOPICS :

1. Introduction to Accounting.
2. Voucher.
3. Accounting Group.
4. Account Books.
5. Accounting Information & Reports.

Unit 1 : Introduction to Accounting- What is Accounting ? Difference between accounting and Book keeping • Advantages of Accounting • System of Financial Accounting • Classification of Accounts • Rules of debit and credit • Manual vs computerized accounting •

Unit 2 : Voucher- Receipt & payment voucher • Journal voucher • Sale & Purchase voucher • Debit & Credit note • Reverse journal and memo voucher •

Unit 3 : Accounting Group- Groups & Sub groups • Primary and Secondary cost centres •

Unit 4 : Account Books- Cash/Bank Book • Journal • General Ledger • Memorendum Register • Sales Register • Purchase Register • Day Book •

Unit 5 : Accounting Information & Reports-Trial Balance • Profit & Loss • Balance Sheet • Ratio Analysis • Cash Flow • Fund flow • Statements of accounts • Negative Ledger • Overdue Receivable • Overdue paybles • Adjustment •

REFERENCE BOOKS

1. Book Keeping and Accounting by M.G. palkar.
- ✓ 2. Financial Management by Khan & Jain
3. The essence of financial Accounting by Chad wick
4. The Essence of Management Accounting by Chandwick



SEMESTER — III

Group A : (THEORY GROUP) Theory papers to be examined by university through examination conducted at the end of semester.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	3BCA1	Information Technology trend	100	40
2.	3BCA2	GUI Programming in Visual Basic	100	40
3.	3BCA3	Database management system	100	40
4.	3BCA4	Computer Networking & LAN	100	40
5.	3BCA5	Management Skills	100	40
Aggregate Marks			500	225

Group B : (Practical & Continuous Evaluation) Sessional work papers to be evaluated internally, however during computer lab test atleast two external university examiners must be present. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	3BCA 6	Internal Assessment & Term Work	100	45
2.	3BCA 7	Computer Lab -III	100	45
3.	3BCA 8	Professional Personality Skills	50	23
Aggregate Marks			250	113

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225

(b) Group B (Sessional Works) Full Marks : 250 Pass Marks : 113

Aggregate Marks of IIIrd Semester : 750 Pass Marks : 338

SEMESTER III

		F.M	P.M	Time
3BCA1	Information Technology Trend	100	40	3hrs.

MAJOR TOPICS :

1. Information System — Hardware
2. Information System— Software
3. Software Engineering
4. Operating System
5. Networking Concept

Unit 1 : Information System — Hardware-The computer structure Architecture • The Memory system • I/O Technology • Selection of computer system • communicating system hardware

Unit 2 : Information System— Software - The system software • File system • Directory structure • Networking Software • Network security • Graphical User Interfaces • Application Software

Unit 3 : Software Engineering - define and Taxonomy • Software Development Pradigms • Requirement Analysis and Specification • Design Strategies • Design Tools and Digramming aids • Design concepts • The Relationship between analysis and Design and how to make the transition • Various Design Methodologies

Unit 4 : Operating System - An overview of operating system • Distributed Operating System • Processor Manangement • I/O File Management /

Unit 5 : Networking Concept - Data communication concept • Classification- serial • Parallel • Simplex • Half - Duplex • Duplex • Communication Media - wire • Microwave • Internet • Intranet (Basic concepts) • Hardware/Software Components required for LAN • Topologies • Protocols (Introduction) • OSI - Layers (Introduction)

REFERENCE BOOKS

- | | |
|------------------------|---------------|
| 1. Computer Networking | by Tanaunbaum |
| 2. Operating System | by Godbole |
| 3. Digital Electronics | by Bartee |

		E.M	P.M	Time
3BCA2	GUI Programming in Visual Basic	100	40	3hrs.

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MAJOR TOPICS :

1. Introduction.
2. Visual Basic Controls.
3. Declaring and Using Memory Space.
4. Control Structure.
5. Procedures & Functions.
6. Exception Handling.
7. File and Database Handling.
8. Object Oriented Programming.
9. VB Project Deployment.

Unit 1 : Introduction- Visual Basic – A Rapid Application Development Tool • Integrated Development Environment of Visual Basic • Concept of object oriented and event driven programming • History of Visual Basic •

Unit 2 : Visual Basic Control- Concept of Control/Active X Control • Label • Textbox, Command Button, Option Button, Check Box, List Box, Combo Box, Slider Control, Image, Picture, Scroll Bar, Clock, File, Directory, Drive, Timer Tab Strip, Flexgrid, Dialog Control • Introduction with important properties, Methods and events • Menu Editor • Tool Bar • Designing interface using controls • Menu, and Tool Bar •

Unit 3 : Declaration and using Memory Space- Variables • Data Types • Scope of Variables • Local and Global variables • Static variables • constants • Array • Dynamic array • Control Arrays •

Unit 4 : Control Structure- Sequence, Selection and iteration structure • selection, and iteration control statements •

- Unit 5 :** Procedures & Function- Creating and working with event driven module • Creating and using sub module and function module • Module • Call by value, all by Reference • Recursion • Library functions – String, Date and Time, Mathematical and Financial, Type Conversion •
- Unit 6 :** Exception Handling- Introduction to exceptional situations – Design Time, Compile time and Run time errors • Error handling techniques.
- Unit 7 :** File and Database Handling- Introduction to different file organization • Files related controls, objects and properties• working with sequential access file • Working with Random Access file • Working with DBMS in VB • Report generation in VB •
- Unit 8:** Object Oriented Programming- The concept of Abstraction and encapsulation – class, object • class module vs standard module• Creating and using classes • Implementing polymorphism in Visual Basic • Introduction to creating Activex Control •
- Unit 9 :** VB Project Deployment- Making an exe file • Package and deployment wizard •

REFERENCE BOOKS

1. Learn Microsoft Visual Basic 6.0 Now	by Halvorson	pub PHI
2. Visual Basic 6.0 from Scratch	by Donald and Oancea	pub PHI
3. Visual Basic 6.0 2nd ed.	by Rahmel	pub TMH
4. MCSD : Visual Basic 6.0 Distributed Applications	by Syngress	pub TMH
5. Teach yourself Visual Basic 6.0	by Warner	pub TMH

		F.M	P.M	Time
3BCA3	Database Management System	100	40	3hrs.

MAJOR TOPICS :

- 1. Introduction.
- 2. Data Models

3. Relational Data Model, Implementation & Manipulation.
4. Normalization.
5. Database Security.
6. Future Trends in DBMS.

- Unit 1 :** Introduction- Introduction to, Database Management System • File Systems and associated problems • Advantages and disadvantages of DBMS • Component/Structure of DBMS • Different data models – introduction to Relational Hierarchical & Network Model •
- Unit 2 :** Data Models- Concept of entities, Attributes, Association and Relationship • Entity Relationship Model • Drawing E-R Diagram • Data Abstraction- Generalization, Specialization, Aggregation, Ansi-sparc Model •
- Unit 3 :** Relational Data Model, Implementation & Manipulation- Concepts of Attributes and Domains • Tuples • Keys • Introduction to Codd's Rules • Introduction to Relation Algebra and Relational Calculus • SQL-DDL • DML • DCL • Introduction to QUEL • Introduction to RQBE •
- Unit 4 :** Normalisation- Relational database design issue • Anomalies in Database • Introduction to Functional dependency • Normalization- 1NF, 2NF, 3NF, BCNF • Normalization through synthesis •
- Unit 5 :** Database Security- Different security policies – Authorization, Identification, Authentication, Encryption decryption, Integrity rules and constraints • Auditing • Introduction to Database recovery mechanism •
- Unit 6 :** Future Trends in DBMS- Concept of Distributed Database System • Knowledge based database System • Expert Database System • Object Database System •

REFERENCE BOOKS

- | | |
|--|-----------------------------|
| 1. Introduction to Database Systems | by C. J. Date |
| 2. Data Base System Concept | by Korth. |
| 3. Principles of Database Management | by James Martin. |
| 4. Computer Database Organization | by James Martin. |
| 5. Relational database design for Micro Computers Applications | by Prentice Hall (Jackson). |

	F.M	P.M	Time
3BCA 4 Computer Network & LAN	100	40	3hrs.

MAJOR TOPICS :

1. Introduction to Computer Network.
2. Network structure.
3. Network Architecture.
4. OS, Reference Model.
5. Transmission media.
6. Transmission & Switching
7. Broadcast Networks & their protocols.

- Unit 1 :** Introduction to Computer Network- Computer Network and uses • Network goals • application of N/Ws •
- Unit 2 :** Network structure- Hosts • communication subnet • IMPS • point-to-point channels • and difference topologies of point to point channels • broadcast channels •
- Unit 3 :** Network Architecture- Protocol Hierarchies • peer processes •
- Unit 4 :** OSI Reference Model- Different layers of OSI model • connection oriented and connection less services •
- Unit 5 :** Transmissin Media- Magnetic media • twisted pair • Baseband co-axial cable • Fibre optics • communication satellites •
- Unit 6 :** Transmission & Swtiching- FDM and TDM • CKT Switching packet switching • Hybrid switching • ISDN •
- Unit 7 :** Broadcast networks & their Protocols- CSMA/CD • CSMA/CA • Ethernet (802.3) • Type of Ethernet cables • token bus (802.4) • token ring (802.5) • WAN Repeaters • Bridges • Routers • Gateways • FDDI Backbones • TCP/IP •

REFERENCE BOOKS

1. Essentials of Networking pub Microsoft Press.
2. Electronic Version of Documentation of WIN 2000 and NOVELL 5.0
3. Documentation of Linux Installation (Electronic version)
4. Computer Networks by Black U.
5. Computer Communication Network by W. Stalling.

	F.M	P.M	Time
3BCA 5 Management Skills	100	40	3hrs.

MAJOR TOPIC :

1. Introduction to Management
2. Evolution of Management thought
3. Planning
4. Organising
5. Leading
6. Controlling

Unit 1 : Introduction to Management - Definition • Nature & Scope • Concepts of Management • Administration & Organisation • Management Process & Levels of Management.

Unit 2 : Evolution of Management Thought - Contribution of F. W. Taylor, Henri Fayol, Peter Druker, Henry Muntzberg, Tom Peters etc. •

Unit 3 : Planning - Scope • Importance • Limitations • Procedure of Planning • Types of Plans • Mission objective • Policy • Strategy • Procedure & rule • Types of Planning • Strategic & Tactical.

Unit 4 : Organising - Procedure & Principles • Span of control • Concepts of authority & Responsibilities • Delegation & Decentralization Line • Staff & Functional authority • Types of Organisation structure •

Unit 5 : Leading - Leadership theories • Traits & Styles • Motivation - Theories of Maslow, McGregor, Herzberg, McClelland, Lawler-Porter Model •

Unit 6 : Controlling - Process & Types of Control

REFERENCE BOOKS

- | | |
|--|--------------------------|
| 1. Essentials of Management | by Harold Kontz Wehrich |
| 2. Principles & Practice of Management | by Saxena |
| 3. Principles & Practice of management | by Shejwalkar & Ghanekar |
| 4. Principles & Practice of management | by Tripathi |
| 5. Management-Tasks, Responsibilities and Practice | by Peter & Drukar |

SEMESTER — IV

Group A : (Theory Group) Theory papers to be examined by university through examination conducted at the end of semester.

Sl. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	4BCA1	Operating Systems	100	40
2.	4BCA2	OOPS Programming in C**	100	40
3.	4BCA3	Internet & E-Commerce	100	40
4.	4BCA4	Linux Operating systems	100	40
5.	4BCA5	System Analysis & Data Processing	100	40
Aggregate Marks			500	225

Group B : (Practical & Continuous Evaluation) Sessional work papers to be evaluated internally, however during computer lab test atleast two external university examiners must be present. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	4BCA 6	Internal Assessment & Term Work	100	45
2.	4BCA 7	Computer Lab - IV	100	45
3.	4BCA 8	Minor Summer Assignment	100	45
4.	4BCA 9	Professional Personality Skills	50	23
Aggregate Marks			350	158

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 225

(b) Group B (Sessional Works) Full Marks : 350 Pass Marks : 158

Aggregate Marks of IVth Semester : 850 Pass Marks : 383

SEMESTER IV

	F.M	P.M	Time
4BCA 1 Operating System	100	40	3hrs.

MAJOR TOPIC :

1. Introduction to Operating System
2. Process Management
3. Storage Management
4. Processor management
5. File Management
6. Device Management

UNIT 1. Introduction to Operating System- What is an Operating System
 • Functions of Operating Systems • Interaction of Operating System with hardware & user Programmes • Types of Operating Systems (Batch Operating System, Multiprogramming Operating System, Network Operating System, Distributed Operating System, Time Sharing Operating System) • Structure of an Operating System •

UNIT 2. Process Management- Definition of process • Process states • Process states Transaction • The process control Block • Operation on process (Suspend & Resume) • Mutual Exclusion • critical section • Dekker's Algorithm's • Semaphores • Deadlock • Indefinite Postponement • Necessary condition for Deadlock • Deadlock Prevention • Deadlock voidance • Deadlock Detection • Deadlock Recovery •

UNIT 3. Storage Management- Storage Organisation, Management, Hierarchy, Management strategies • Contiguous & Non Contiguous storage Allocation • Single user Contiguous Storage Allocation • Variable Portion Multiprogramming • Virtual Storage • Paging • Segmentation • Combined paging & Segmentation system • Page Replacement • Strategies • Demand Paging • Page fault frequency page replacement•

UNIT 4. Processor management- Scheduling Levels •Scheduling Criteria • Pre-emptive vs. Non Preemptive Scheduling • Interval Timer • Priorities •FIFO Scheduling • RR Scheduling • SJFS Scheduling •SRT Scheduling•

UNIT 5. File Management- File Concept • Directories • Directory structure in DOS • Moving • Renaming • Copying • Deleting and undeleting files under DOS • Disk Organisation • Disk Scheduling •

UNIT 6. Device Management- Control of Various Devices • Device drivers
 • Interrupt driven or Poll driven Data transfer • Need of software & hardware Protocols •

REFERENCE BOOKS

1. Operating System	by Godbole		
2. Operating System Concept	by Peterson		
3. Operating System Concept & Design	by Milenkovic	pub TMH	
	F.M	P.M	Time
4BCA 2 OPSS Programming in C++	100	40	3hrs.

MAJOR TOPICS :

1. Introduction to object oriented concepts.
2. Fundamentals of C++ Programming.
3. Constructors and Destructors.
4. Overloading.
5. Inheritance.
6. Virtual Functions.
7. Streams.
8. Template.
9. Exception Handling.

Unit 1 : Introduction to object oriented concepts- Inheritance • class • objects • Polymorphism Overloading • Dynamic Binding • Advantages of OOP Object Oriented Analysis and Design •

Unit 2 : Fundamentals of C++ Programming- History of C++ • Structure of a C++ Program • Declaration of Class and Object - definition and declaration of members • objects • as datatypes • Objects as function arguments, structures and classes • Data types - Basic datatypes • user defined datatypes • Variables and constants - Dynamics initialization of variables • reference variables • enumerated variable • Operators and expressions • Coding central construct - sequence, selection, iteration Arrays and strings • Input/output mechanisms : cin, out • Concepts of functions : Declaration, calling, definition • Scope rules of members of class • Data and type conversion • between basic types • between objects and basic types • between objects of different classes • Limitations of type conversion•

Unit 3 : Constructors and Destructors- Basic constructors • Parameterized constructors • constructors with default arguments • Dynamic initialization of objects • copy constructors • Destructors • Limitations on constructors and destructors •

Unit 4 : Overloading- Function overloading • Operator overloading - unary, binary

Unit 5 : Inheritance- Derived classes and base classes • Access specifiers
Derived class constructors • Member functions overriding • Types of inheritance - Public and Private • Multiple inheritance •

Unit 6 : Pointers and Virtual Functions- Pointers concepts • Pointers to objects
• memory management using new and delete operators • Virtual functions and polymorphism • Friend functions • Static functions • Macros and inline function •

Unit 7 : Streams- Streams classes - hierarchy • header files • stream manipulators
string stream • character streams • Object I/O • File streams • Disk I/O with member function •

Unit 8 : Templates- Function templates • class templates •

Unit 9 : Exception Handling- Try block • Catch handler • Throw statement •
Exception specification •

	F.M	P.M	Time
4BCA 3 Internet & E- Commerce	100	40	3hrs.
<u>MAJOR TOPICS :</u>			

1. Internet Concept
2. Internet Implementstion
3. Electronic Commerce & Banking
4. Electronic Commerce and Retailing
5. Electronic commerce and on Line publishing

Unit 1 : Internet Concept - What is Internet • How it is different from Intranet
• Groupware • Feture of Internet-Cheaper, Flexible, Versatile • Data tramission in Intranet • Platform for Internet • Network Topologies • Servers (NT/NOVELL/ UNIX/LINUX) • Client Workstation

Unit 2 : Internet Implementation - Hardware, Software Protocols for Internet • IP Network • HTTP Server • SMTP, POP3, IMAP4, LDAP, Document Server • Implementing Intranet Using Novell and Windows.

Unit 3 : Electronic Commerce and Banking - Requirements • Standards • Case Studies

Unit 4 : Electronic Commerce and Retailing - Requirements • Standards • Case Studies

Unit 5 : Electronic Commerce and Online Publishing - Requirements • Standards • Case Studies

REFERENCE BOOKS

1. Electronic Commerce : The Cutting Edge of Business	by Bajaj & Nag	pub TMH
2. E-Commerce Strategies	by Trepper	pub PHI
3. The Internet Complete Reference	by Hahn	pub TMH
4. E-Commerce Essentials with Microsoft FrontPage Version 2002	by Holden	pub PHI

	F.M	P.M	Time
4BCA 4 Linux Operating Systems	100	40	3hrs.

MAJOR TOPIC :

1. Introduction to system software.
2. Introduction to Assembler.
3. Introduction to Compiler.
4. Introduction to OS.
5. Basics of LINUX.
6. File system & concept of Blocks in LINUX.
7. Communication in LINUX.
8. Shell programming.

- Unit 1 : Introduction to system software & types of software •
- Unit 2 : Introduction to Assembler-Types of translator • Assembler • implementation, Macro and macroprocessor, loaders.
- Unit 3 : Introduction to compiler- Approachers to compiler development compiler design phases software tools lex, yacc •
- Unit 4 : Introduction to OS- Operating System structure - Layered structure approach • kernel approach • virtual machine • client - server model•

- Unit 5 : **Basics of Linux-** History of Linux • features of Linux system S/W layers•
- Unit 6 : **File system & Concepts of block in Linux-** file system • files & directories commands • different types of files and directory permission • other useful commands • disk related command • boot block • super block • I/O redirection • piping • tree command • filters•
- Unit 7 : **Communication in LINUX-** Process in Linux • Background processes and foreground process • Advantage and disadvantage of background process • running process in background • different process related commands •
- Unit 8 : **Communication in Linux-** Communication in Linux • different communication related commands - write, wall etc •
- Unit 9 : **Shell Programming-** vi editor • shell variables • keywords • positional parameters • passing command line arguments • control instruction etc •

REFERENCE BOOKS

1. Linux Administration Handbook	by Nemeth et al	pub PHI
2. Linux : The Complete Reference	Petersen	pub. TMH
3. UNIX : Concept and applications- Featuring SCO UNIX and LINUX		
	by Das, Sumitabha	pub TMH
4. Red Hat Linux : Administrative Tools	by Fisher	pub TMH

		F.M	P.M	Time
4BCA 5	System Analysis and Data Processing.	100	40	3hrs.

MAJOR TOPIC :

1. **Software life cycle**
2. **SW Inspection**
3. **System Analysis**

4. SW Design

5. User Interface Design

Unit 1 : Software life cycle - Models : Waterfall, Spiral, Prototyping Fourth generation techniques, SW recess • Software requirements specifications(SRS) • Fact-finding Techniques, Characteristics of a good SRS : Unambiguous, Complete Variable, Consistent, Modifiable, Traceable and Usable During The Operation and Maintenance phase, Prototype outline for SRS.

Unit 2 : SW Inspection - Communication skills for the System Analyst, Review/ Inspection Procedure • Document, Composition of the inspection team, check list, reading by the inspectors, recording of the defects and action recommended • Students should practice inspecting small requirement specifications for good characteristics.

Unit 3 : System Analysis - SA tools and Techniques, DFD, Entity Relationship Diagrams, Project Dictionary.

Unit 4 : SW Design - System Design Tools and Techniques, Prototyping, Structured Programming

Unit 5 : User Interface Design - Elements of Good design, Design issues, Features of a modern GUI, Menus, scrolling, Windows, Icons, Panels, Error messages etc.

REFERENCE BOOKS

1. System Analysis and Design Methods & Barlow	by Whitten, Bentley.
2. Systems Analysis and Design, 5th ed.	by Kendall & Kendall pub PHI
3. Softwar Testing Techniques	by Beizer.

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SEMESTER — V

Group A : Theory papers to be examined by university through examination conducted at the end of semester.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	5BCA1	Component Architecture and Programming (COM, DCOM)	100	40
2.	5BCA2	Multimedia Tools & Applications	100	40
3.	5BCA3	Programing in JAVA	100	40
4.	5BCA4	Oracle RDBMS	100	40
5.	5BCA5	Computer Centre Management	100	40
Aggregate Marks			500	200

Group B : Sessional work papers to be evaluated internally, however during computer lab test atleast two external university examiners must be persent. Evaluated answer sheet and marks foil shall be forwarded to the university, Controller of Examination.

SL. No.	Semester & Paper Code	Name of Subject	Full Marks	Pass Marks
1.	5BCA 6	Internal Assessment & Term Work	100	45
2.	5BCA 7	Computer Lab -V	100	45
3.	5BCA 8	Professional Personality Skills	50	23
Aggregate Marks			250	113

(a) Group A (Theory Papers) Full Marks : 500 Pass Marks : 200
(b) Group B (Sessional Works) Full Marks : 250 Pass Marks : 113
Aggregate Marks of Vth Semester : 750 Pass Marks : 338

SEMESTER V

		F.M	P.M	Time
5BCA 1	Component Architecture Programming (COM, DCOM)	100	40	3hrs.

MAJOR TOPIC :

1. COM & DCOM Basics
2. Building Distributed, Scalable Applications with COM Part I
3. Building Distributed, Scalable Applications with COM Part II

Unit 1 : COM & DCOM Basics - COM/DCOM Issues • Components • Persistence • Sharing and Scalability •

Unit 2 : Building Distributed, Scalable Applications with COM Part I - Transactions and Databases • Multi-Tier Architecture • Security •

Unit 3 : Building Distributed, Scalable Applications with COM Part II - Clustering • Message Queuing •

		F.M	P.M	Time
5BCA 2	Multimedia Tools and Application.	100	40	3hrs.

MAJOR TOPIC :

1. Introduction
2. Multimedia System
3. Video Technology
4. Video Compression
5. Hardware Peripherals
6. Multimedia & Internet
7. Multimedia on Windows

Unit 1 : Introduction - Goal, Objective & applications, Multimedia building blocks • Multimedia Hardware, Platform & Software tools, Authoring Tool.

Unit 2 : **Multimedia System** - File Format (BMP, GIF, PCX etc.), Communication System • & Multimedia Database •

Unit 3 : **Video Technology** - Animation Basics, Digital Imaging (Still & Moving) Video Capture, Video Processing, Video recovery techniques, AVO & AVI file formats, Conferencing techniques, Video streaming, Video Technology Motion of Synchronization.

Unit 4 : **Video Compression** - LZW, DCT Coding, JPEGF, MPEG, Hypertext & Hyper media • SGMI, Document architecture, ODA, MHEG •

hardware Peripherals - Connection • Memory & storage devices • Input & Output devices • Communication devices •

Unit 6 : **Multimedia & Internet** - Design WWW

Unit 7 : **Multimedia on Windows** - Multimedia function calls, windows supports for sound, animation, movies, music & midicontrols •

REFERENCE BOOKS

1. Multimedia : Computing, Communication and applications
by Ralf Steinmetz & Klara Nahrsted.
2. Multimedia making it work
by Tay Vazighan.
3. Multimedia in practice
by Judith Jeffecoate pub PHI

	F.M	P.M	Time
5BCA 3 Programming in JAVA	100	40	3hrs.

MAJOR TOPIC :

1. **Applet As Java Applications**
2. **Abstract Windows Toolkit and event handling in JAVA**
3. **Multithreading**
4. **Swing libraries**
5. **Input / Output using streams**
6. **Introduction to Networking with JAVA**
7. **JDBC**
8. **Java Beans & EJB**

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Unit 1 : **Applet As Java Applications**- Applets specific methods & Related HTML references • Creating an applet • Displaying it using Web Browser with an applet viewer exe • Advantages and Disadvantages of Applet Vs Applications •

Unit 2 : **Abstract Window Toolkit and Event handling in JAVA** - Components used in AWT • Basics of event handling and Individual events • AWT package •

Unit 3 : **Multithreading** - Introduction • Thread classes & its methods • Thread priorities • Thread synchronization •

Unit 4 : **Swing Libraries** - The model-view controller design pattern • Different layout, menus dialog boxes, text input •

Unit 5 : **Input / Output using streams** - Introduction • Files & Streams • Reading data from sequential access file • Updating sequential access file • Random access file • Class file • Buffered reader, Buffer writer classes •

Unit 6 : **Introductions to networking with JAVA** - Introduction • The URL class • The socket and server-socket classes • Connecting to the server • A simple chat program •

Unit 7 : **JDBC** - The Java database connectivity standard • 4 different types of drivers and their advantages • JDBC-ODBC connectivity with ms-access database • Three Tire architecture •

Unit 8 : **Java Beans & EJB** - Why Beans • How Beans are used the BDK • Beans Properties & Methods • Introduction to EJB •

REFERENCE BOOKS

1. Java Thread Programming
2. Java Beans Programming
3. Mastering Java Beans

by Paul Hyde

by Joseph O'Neil

by Laurence Vanhe Isuwe

	F.M	P.M	Time
5BCA 4 Oracle RDBMS	100	40	3hrs.

MAJOR TOPIC :

1. Introduction to the Relational Model
2. Normalisation and Query Processing

3. Recovery, Concurrency Management and Database Security

Unit 1 : Introduction to the Relational Model - An overview of the Relational Model • Data Independence • ER diagrams • Relational Algebra Operation • Referential Integrity and Database Integrity • SQL

Unit 2 : Normalisation and Query Processing - Functional Dependency • Normalisation • multivalued and Join Dependency • Query Processing

Unit 3 : Recovery, Concurrency Management and Database Security - Reliability • Concurrency Management • Concurrency Control • Locking Scheme • Database Security, integrity and Control • Practicals on SQL Server •

REFERENCE BOOKS

- | | |
|----------------------------------|---------|
| 1. Oracle How - To Waite Group | pub BPB |
| 2. Oracle 9i Complete referance | pub TMH |
| 3. OCP Oracle DBA Training Guide | pub BPB |

	F.M	P.M	Time
5BCA 5 Computer Centre Management	100	40	3hrs.

MAJOR TOPIC :

1. Introduction
2. Profile of an entrepreneur
3. Motivation proces
4. Group Dynamics
5. Organizational design
6. Leadership

Unit 1 : Introduction - What is organization components of organization nature and variety of organization (in terms of objectives, structure etc.) importance of organizational behaviour in work situation fundamental concept of OB-different models of OB i.e. ntoeratic, custodial, supportive, collegial.

Unit 2 : Profile of an entrepreneur - Perception, attitudes, commitment, values

creativity and other personality factors-motives-primary, secondary-
(achievement, power, affiliation).

Unit 3 : Motivation process - Intrapersonal conflict-defence mechanisms-study of selected theories of motivation-McGregor's theory X and Y, Abraham Maslow's theory of head hierarchy-Herzberg's two factor theory-vector vroom's expectancy theory.

Unit 4 : Group Dynamics - Formal and informal groups, types of groups, theories of group formation.

Unit 5 : Organizational design - Various organizational structures and their effects on human behaviour-organizational elimate, organizational culture.

Unit 6 : Leadership - Definitlon - importance to the organization-different styles of leadership.

REFERENCE BOOKS

1. Behavior in Organizations by Greenberg & Baron
2. Management of Organizational Behavior : Leading Human Resources, 8th ed. by Hersey, Blanchard & Johnson
3. Modern Organizations by Etzioni
4. Entrepreneurship and small Business Management by B.S. Bhatia & G.S. Batra

