MAHATMA GANDHI UNIVERSITY

SCHOOL OF DISTANCE EDUCATION

CBCSS SYLLABUS FOR

BACHELOR OF COMPUTER APPLICATION

(**B.** C. A)

(w. e. f. 2012 Academic Year)

OFF-CAMPUS ACADEMIC PROGRAMME

MAHATMA GANDHI UNIVERSITY

Priyadarshini Hills P.O., Kottayam.

Kerala – 686 560

Web : <u>www.mgu.ac.in</u>

[Established by Kerala State Legislature by Notification No. 3431/Leg.C1/85/Law dated 17th April 1985]

REGULATION FOR

CHOICE BASED CREDIT SEMESTER SYSTEM UNDERGRADUATE PROGRAMMES IN THE SCHOOL OF DISTANCE EDUCATION (MGU – CBCSS – UG – SDE 2012)

2012

MAHATMA GANDHI UNIVERSITY

Regulations of Choice based Credit Semester System Undergraduate Curriculum 2012 in School of Distance Education (CBCSS) - UG-SDE.

1. SHORT TITLE

1.1. These regulations shall be called "Mahatma Gandhi University Regulations of Choice based Credit Semester System - Under Graduate Curriculum 2011, in School of Distance Education" (MGU – CBCSS - UG SDE 2012.)

2. APPLICABILITY AND COMMENCEMENT

2.1. The regulations provided herein shall apply to all UG Programmes conducted by the Mahatma Gandhi University under School of Distance Education, under various faculties for the Programmes, including private registration, commencing from 2012-13 admission.

2.2. The provisions herein supersede all the existing regulations/orders governing conduct of programmes in Private/Distance mode in Undergraduate Programmes conducted by the Mahatma Gandhi University unless otherwise specified.

3. DEFINITIONS

3.1. 'Programme' means the entire course of study and examinations (traditionally referred to as course).

3.2. 'Duration of programmes' means the time period required for the conduct of the programme. The duration of an undergraduate degree programme shall be six semesters distributed in a period of 3 years.

3.3. 'Semester' means a term consisting of a minimum of 6 months including the days of examination.

3.4. 'Course' means a segment of subject matter to be covered in a semester (traditionally referred to as paper).

3.5. 'Common Course' means a course that comes under the category of courses, including compulsory English and additional language courses and a set of general courses, selection of which is compulsory for all students undergoing undergraduate programmes.

3.6. 'Core course' means a compulsory course in a subject related to a particular degree programme.

3.7. 'Open Course' means a course which can be opted by a student at his/her choice. (The Open Courses that can be chosen by the student shall be from among the courses prescribed by the respective Board of Studies)

3.8. 'Complementary Course' means a course which is generally related to the core course (traditionally referred to as subsidiary paper).

3.9. 'Repeat Course' is a course that is repeated by a student for having failed in that course in an earlier registration.

3.10. 'Improvement course' is a course registered by a student for improving his performance in that particular course. Improvement should be made in the first immediate chance.

3.11. 'Credit"(Cr.) of a course is a measure of the weekly unit of work assigned for the course.

3.12. 'Letter Grade' or simply grade in a course is a letter symbol (A,B,C,D,E) which indicates the level of performance of a student in a course.

3.13. Each letter is assigned a 'Grade Point' (G) which is integer indicating the numerical equivalent of the broad level of performance of a student in a course.

3.14. 'Credit Point (P) of a course is the value obtained by multiplying the Grade Point (G) by the Credits (Cr.) of the course $P = G \times Cr$.

3.15. 'Semester Grade Point Average' (SGPA) is the value obtained by dividing the sum of Credit Points (P) obtained by a student in the various courses taken in a semester by the total number of Credits taken by him/her in that semester. The Grade Point shall be rounded off to two decimal places. SGPA determines the overall performance of a student at the end of a semester.

3.16. 'Cumulative Grade Point Average' (CGPA) is the value obtained by dividing the sum of credit points in all the courses taken by the student for the entire programme by the total number of Credits and shall be rounded off by two decimal places.

3.17. Words and expressions used and not defined in this regulation but defined in the Mahatma Gandhi University Act and Statutes shall have the meaning assigned to them in the Act and Statutes.

4. PROGRAMME STRUCTURE

4.1. Students shall be admitted into undergraduate programme under faculties of -LANGUAGE AND LITERATURE, SOCIAL SCIENCES, SCIENCE, COMMERCE, MANAGEMENT SCIENCE, AND BEHAVIOURAL SCIENCES.

4.2. Duration: The duration of an Undergraduate Programme shall be 6 semesters distributed in a period of 3 academic years. The odd semesters shall be from June to October and even semesters shall be from December to April.

4.3. Courses: The Undergraduate programme shall include four types of courses, viz., Common Course (Code A), Core Courses (Code B), Complementary Courses (Code C), Choice Based course (Code D) and Open Courses (Code E).

4.4. Course Code: Each course shall have an alpha numeric code number, which includes abbreviation of the subject in two letters, the semester number (1 to 6) in which the course is offered, the code of the course (A to E) and the serial number of the course (01,02......) For example: ENIBOI means core course in English for the first semester.

4.5. Common Courses: Every under graduate student shall undergo 10 common courses (Total 38 credits)

4.6. Core courses: Core courses are the courses in the major (core) subject of the degree programme chosen by the student. The number of core courses varies from 10 to 18. The Credit of Project Work in each programme shall be distributed to courses in the 5th or 6th Semesters.

4.7. Complementary courses: Complementary courses cover one or two disciplines that are related to the core subject and are distributed in the first four semesters.

4.8. Open Courses

[Details of Core Courses, Complementary Courses and Open Courses will be notified each year at the time of admission notification for each programme.] 4.9. Credits: Each course shall have certain credits. For completing the degree programme, the student shall be required to attend examinations for a minimum of 120 credits (of which 38 credit shall be from Common courses, 78 credits from Core, Complementary, Choice based and 4 Credits from Open courses.)

5. REGISTRATION

5.1. All the students who satisfy the minimum eligibility conditions can register through School of Distance Education, in different programmes.

5.2. A student who register for the programme shall complete the programme within 6 years from the year of registration.

5.3. Those students who have followed the UG courses in annual pattern can cancel their earlier registration and can register afresh for Choice based Credit Semester System-UG-School of Distance Education programme in the same discipline or a different one.

5.4. A student registered under Choice based Credit Semester System-UG-Regular pattern can change over to the Choice based Credit Semester System-UG-School of Distance Education mode in the same core programme, if that programme is offered under the CBCSS – UG – SDE and continue his studies from where he had stopped.

5.5. A student registered under Choice based Credit Semester System-UG-School of Distance Education mode may be permitted to change to Choice based Credit Semester System - UG - Regular mode in the same programme only.

6. BOARD OF STUDIES AND COURSES

6.1. The Scheme and Syllabi approved by the Board of Studies (UG) for various courses are offered in the Under-graduate Programmes in Distance Education Stream. The Board of Studies may design and introduce new courses, modify or re-design existing courses and replace any existing courses with new/modified /re-designed courses, if necessary, to facilitate better exposures and training for the students.

6.2. The syllabus of a course shall include the title of the course, the number of credits and reference materials. The student shall complete the prerequisites, if any, for the course before the commencement of classes.

6.3. Each course shall have an alpha-numeric code, title and credits. The code gives information on the subject, the semester number and the serial number of the course.

7. ADMISSION

7.1. The admission to all Programmes will be as per the rules and regulations of the University.

7.2. The eligibility criteria for admission shall be as announced by the University from time to time

7.3. All admission to Choice based Credit Semester System-UG-School of Distance Education will be done through School of Distance Education/Private Registration section.

8. EXAMINATION

8.1. For practical convenience, 1st and 2^{nd} end semester exam may be conducted at the end of 2nd semester, 3^{rd} and 4^{th} Semester examinations at the end of 4^{th} semester and 5^{th} and 6^{th} semester examinations at the end of 6^{th} semester.

8.2. The theory examination of each course will be of 3 hours duration. It shall contain two parts (Internal and External). The internal examination will be conducted at the beginning of this 3 hours duration. For Internal examinations, 20 multiple choice questions are to be answered in the OMR Sheets during the first 15 minutes. The rest 2 hours 45 minutes are for answering External examination in the bar coded answer books.

8.3. The external question paper may contain objective, short answer type, paragraph type and essay type questions.

8.4. Different types of questions shall possess different weightage to quantify their range. Weightage can vary from course to course depending on their comparative importance. But a general pattern may be followed by the Board of Studies and is given in the appendix (Table 3).

9. EVALUATION AND GRADING

9.1. The evaluation scheme for each course shall contain two parts.

(i) Internal Evaluation (OMR Test)

(ii) External Evaluation

The weightage of internal and external evaluation is as follows.

Evaluation	Weightage
Internal	1
External	3

Both internal and external evaluation will be done using Direct Grading System.

9.2. **Evaluation**: The external examination is to be conducted with question papers set by subject experts. The evaluation is done by a panel of examiners from affiliated colleges and retired teachers (upto the age of 65) on a well-defined scheme of evaluation prepared by concerned Board of Examiners.

9.3. Photocopies of the answer scripts of the external examination shall be made available to the students on payment of the prescribed fee with an application to that effect after the completion of Re-valuation and Scrutiny. Students can apply for revaluation / scrutiny within the last date prescribed in the notification of the results of each examination.

9.4. Re-valuation: There is provision for Re-valuation in the new system of grading. The existing rules of award of grades consequent on Re-valuation will be followed.

10. DIRECT GRADING SYSTEM

10.1. DIRECT GRADING SYSTEM based on a 5 point scale is used to evaluate the performance (External and Internal) of students.

Letter Grade	Performance	Grade Point	Grade Range
A	Excellent	4	3.50 to 4.00
В	Very Good	3	2.50 to 3.49
С	Good	2	1.50 to 2.49
D	Average	1	0.50 to 1.49
E	Poor	0	0.00 to 0.49

10.2. Each course is evaluated by assigning a letter grade (A,B,C,D or E) to that course by the method of direct grading. The Internal (weight=1) and External (weight=3) components of a course are separately graded and then combined to get the grade of the course after taking into account of their weights (See Appendix for details).

10.3. A combined minimum of D Grade for Internal (OMR) and External is required for a pass in a course and the entire programme for awarding a degree.

10.4. There will be no supplementary examinations. A student who fails to secure a minimum grade for a pass in a course is permitted to write the examination along with the next batch. For re-appearance / improvement, students can appear along with the next batch.

10.6. The Cumulative Grade Point Average (CGPA) of the student is calculated at the end of a programme. The CGPA of a student determines the overall academic level of the student in a programme and is the criterion for grading the students.

An overall grade (Cumulative Grade) for the whole programme shall be awarded to the student based on the value of CGPA using a 7 point scale given below.

CGPA	Overall Letter Grade
3.80 to 4.00	A+
3.50 to 3.79	Α
3.00 to 3.49	B+
2.50 to 2.99	В
2.00 to 2.49	C+
1.50 to 1.99	С
1.00 to 1.49	D

Overall Grade in a Programme

For instance, if CGPA of a student turns out to be 3.42, then her/his Cumulative Grade will be B+.

CGPA can be calculated as detailed below :

If the candidate is awarded two A grades, three B grades and one C grade for the six semesters and has 120 credits, the CGPA is calculated as follows :

Semester	Credit taken	Grade Grade Point Crec		Credit Point		
1	20	В	3 60			
2	20	В	3	60		
3	20	А	4	80		
4	20	C	2	40		
5	20	В	3	60		
6	20	A 4		80		
TOTAL	120	380				
CGPA	Total credit points / Total Credits = 380/120 = 3.17 (which is between 3.00					
	and 3.49 in the 7 point scale). The overall Grade awarded is B+					

SGPA and CGPA shall be rounded off to two decimal places. CGPA determines the broad academic level of the student in a programme and is the index for grading students. An overall letter grade (Cumulative Grade) for the entire Programmes shall be awarded to a student depending on her/his CGPA.

10.7. Improvement course: A maximum of two courses (common, core, complementary) can be improved in each semester. Provided that it should be done at the next immediate examination.

11. GRADE CARD

11.1. The University will not issue separate semester wise grade card to the students. The students can download the same from University website. Semester wise grade card shall be issued on specific request on payment of prescribed fee.

11.2. The final Grade Card issued at the end of the final semester shall contain the details of all courses taken during the entire programme. The final grade card shall show the CGPA and the overall letter grade of a student for the entire programme.

11.3. A separate grade card shall be issued with the CGPA of common courses alone at the end of IV Semester of Model-I programmes.

12. AWARD OF DEGREE

12.1. The successful completion of all the courses (common, core, complementary and open courses) for the degree programme with C grade (CGPA of 1.5) shall be the minimum requirement for the award of the degree.

13. GRIEVANCE REDRESSAL COMMITTEE :

13.1. University level: The University shall form a Grievance Redressal Committee as per the existing norms.

14. TRANSITORY PROVISION

Notwithstanding anything contained in these Regulations, the Vice-Chancellor shall, for a period of one year from the date of coming into force of these regulations, have the power to provide by order that these regulations shall be applied to any programme with such modifications as may be necessary.

APPENDIX

1. DIRECT GRADING SYSTEM

Evaluation (Internal and External) is carried out using a Direct Grading System based on a 5-point scale given below:

Letter Grade	Performance	Grade Point	Grade Range
А	Excellent	4	3.50 to 4.00
В	Very Good	3	2.50 to 3.49
С	Good	2	1.50 to 2.49
D	Average	1	0.50 to 1.49
E	Poor	0	0.00 to 0.49

Table 1 : Direct Grading System

In Direct Grading, each answer in an answer book is directly given a letter grade in place of marks. The overall grade of the answer book is then obtained by adding these grades of the individual answers accounting for the weights defined for the corresponding questions in the question paper (see below). Addition of letter grades is facilitated by the numerical grade point associated with each letter grade (see table 1). There is no involvement of marks in this system of valuation.

Grades of individual answers are decided with the help of a well defined scheme of valuation. The best answer is given grade A (Excellent)and the worst answer is given grade E (Poor). Answers falling in between these two grades are assigned the grades B (Very GOOd}, C (Good), D(Average) depending on their quality with reference to the scheme.

2. EXTERNAL EVALUATION

2.1. Calculation of the Grade of an answer paper (External Grade)

Let us now consider a full question paper consisting of 9 short answer type (compulsory), 7 paragraph type (5 to be answered) and 3 essay type questions (two to be answered). Knowing the grades awarded to the answers of these questions the overall grade of the answer paper can be calculated as shown in table 2.

Question	Question No.	Grade	Grade Points	Weight	Weighted
Туре		Awarded			Grade Point
Short Answer	1	А	4	1	4
(Compulsory)	2	D	1	1	1
	3	В	3	1	3
	4	С	2	1	2
	5	А	4	1	4
	6	В	3	1	3
	7	D	1	1	1
	8	С	2	1	2
	9	А	4	1	4
Short Answer	10	А	4	2	8
Type (5 out	11	D	1	2	2
of 7)	12	В	3	2	6
	13	-	-	-	-
	14	А	4	2	8
	15	В	3	2	6
	16	-	-	-	-
Essay (2 out	17	-	-	-	-
of 3)	18	А	4	4	16
	19	А	4	4	16
TOTAL				27	86

Table 2. Calculation of Grade of an answer paper

Grade of a Course = Sum of weighted Grade points / sum of weight

- = 86/27
- = 3.19 = Grade B.

3. INTERNAL EVALUATION

The internal examinations may be conducted with 20 multiple choice question (taken from a pool of 200-250 MCQ provided as a question bank by School of Distance Education) and OMR answer sheet. The grading may be done as follows (Table 3)

Table.3

Correct Answer to	Grade Awarded
16-20 questions	A
11-15 questions	В
06-10 questions	С
01-05 questions	D
0 questions	E

4. CALCULATION OF THE GRADE OF A COURSE

The grade of a course is calculated by combining the grades of the External and internal examinations taking care of their weights. For a particular course, let the grades scored by a student be C and B respectively for the External and Internal evaluations as shown in the above examples. Then the grade of the course can be calculated as follows :

Exam	Weight	Grade Awarded	Grade Points	Weighted Grade
				Points
External	4	С	2	8
Internal	1	В	3	3
Total	5			11

Grade of a course = Sum of weighted grade points / sum of weight = 11/5 = 2.20 =Grade C

5. CALCULATION OF SGPA

After calculating the grade of each course as mentioned above, we can calculate SGPA as shown below.

Course Code	Title of	Credit	Grade	Grade Points	Credit Points
	Course		Awarded		
01		3	А	4	12
02		4	В	3	12
03		4	C	2	8
04		4	С	2	8
05		4	В	3	12
Total		19			52

SGPA = Sum of Credit points/Sum of Credits = 52/19 = 2.74

SGPA is shown in 2 decimal places

6. CALCULATION OF CGPA : Just as we calculated SGPA, CGPA can be calculated at the end of a programme considering all the courses taken by the student Subject to the minimum credits requirements.

SCHEME FOR BCA PROGRAMME UNDER OFF Campus SDE Stream

	Course Code Title of Course			WEIGHTAGE	
			Credit	Int.	Ext.
	BCA101	Common course – English – 1. Communication Skills in English	4	1	3
ERI	BCA102	Complementary-1 : Mathematics – Matrices, Calculas and lapilas transformers	4	1	3
1EST	BCA103	Complementary-2 : Basic Statistics	4	1	3
SEN	BCA104	Core -1 : Introduction to Computers	4	1	3
	BCA105	Core -2 : Methodology of Programming and programming in C	3	1	3
	BCA106	Core -3 : Software Lab – I	2	1	3
		TOTAL	21		
	BCA201	Common Course – English-2 : Critical Thinking, Academic Writing & Presentation	4	1	3
=	BCA202	Complementary-3 : Discrete Mathematics	4	1	3
TER	BCA203	Core -4 : Accounting & Programming in Cobol	3	1	3
SEMES	BCA204	Core -5 : Data Structures	3	1	3
	BCA205	Core -6 : Fundamentals of Digital Systems	4	1	3
	BCA206	Core -7 : Software Lab – II	2	1	3
		TOTAL	20		

	Course Code	Title of Course		WEIGHTAGE	
			Credit	Int.	Ext.
	BCA301	Complementary-4: Advanced Statistical Methods		1	3
RI	BCA302	Core -8 : Design and Analysis Of Algorithms		1	3
5SEMESTE	BCA303	Core -9 : Computer Organization & Architecture		1	3
	BCA304	Core -10 : Computer Graphics		1	3
	BCA305	Core -11 : Object Oriented Programming and C++		1	3
	BCA306	Core -12 : Software Lab – III		1	3
		TOTAL	21		

ESTER IV	BCA401	Complementary-5: Operational Research	4	1	3
	BCA402	Core -13 : Microprocessor & PC Hardware	4	1	3
	BCA403	Core -14 : System Analysis & Design		1	3
	BCA404	Core -15 : Database Management Systems		1	3
EMI	BCA405	Core -16 : Visual Programming Techniques	3	1	3
0,	BCA406	Core -17 : Software Lab – IV	2	1	3
		TOTAL	21		
	BCA501	Core -18 : Computer Networks	etworks 4 1 stems 4 1 pming 3 1		3
	BCA502	Core -19 : Operating Systems		1	3
>~	BCA503	Core -20 : Java Programming		1	3
STEF	BCA504	Core -21 : Open Course	4	1	3
ME	BCA505	Core -22 : Software Lab – V	2	1	3
S	BCA506	Core-23 : Software Development Lab – I (Mini Project)	2	1	3
		TOTAL	19		
	BCA601	Core -24 : Web Technology	4 1		3
	BCA602	Core -25 : Software Engineering	4	1	3
SEMESTER VI	BCA603	Core -26 : Choice based : (Any one of the following) (A) Client Server Computing (B) Linux Operating System	4	1	3
	BCA604	Core -27 : Seminar	2	1	3
	BCA605	Core -28 : Software Development Lab II (Main Project)		1	3
		TOTAL	18		

CREDIT DETAILS :

Common Course – I : English	08
Complementary CourseS	20
Core Course	88
Open Course	04
TOTAL	120

FIRST SEMESTER

Common Course – English - 1: COMMUNICATION SKILLS IN ENGLISH

COURSE CODE	ENCN1
TITLE OF THE COURSE	COMMUNICATION SKILLS IN ENGLISH
SEMESTER IN WHICH THE COURSE IS TO	1
BE TAUGHT	
NO. OF CREDITS	4
NO. OF CONTACT HOURS	90

1. AIM OF THE COURSE

• To develop the students' ability to use English language accurately and effectively by enhancing their communication skills.

2. OBJECTIVES OF THE COURSE

- To introduce the students to the speech sounds of English in order to enable them to listen to English and speak with global intelligibility.
- To enable the students to speak English confidently and effectively in a wide variety of situations.
- To help the students to improve their reading efficiency by refining their reading strategies.

3. COURSE OUTLINE

MODULE – I

Speech Sounds

Phonemic symbols - Vowels - Consonants - Syllables - Word stress - Stress in polysyllabic words – Stress in words used as different parts of speech - Sentence stress – Weak forms and strong forms – Intonation – Awareness of different accents: American, British and Indian – Influence of the mother tongue

MODULE – II

Listening

Active listening – Barriers to listening – Listening and note taking– Listening to announcements – Listening to news on the radio and television

MODULE-III

Speaking

Word stress and rhythm – Pauses and sense groups – Falling and rising tones –Fluency and pace of delivery – Art of small talk – Participating in conversations – Making a short formal speech – Describing people, place, events and things – Group discussion skills and telephone skills

36 hours

18 hours

18 hours

MODULE – IV

Reading

18 hours

Reading: theory and Practice – Scanning - Surveying a textbook using an index - reading with a purpose – making predictions – Understanding text structure – Locating main points – Making inferences - Reading graphics - reading critically – Reading for research

4. CORE TEXT

V.Sasikumar, P Kiranmai Dutt and Geetha Rajeevan, . *Communication Skills in English.* Cambridge University Press and Mahatma Gandhi University.

FURTHER READING

Sl.No	Title	Author	Publisher & Year		
1	A Course in Listening and Speaking I & II	Sasikumar V.,Kiranmai Dutt and Geetha Rajeevan	New Delhi: CUP, 2007		
2	Study Listening: A Course in Listening to Lectures and Note-taking	Tony Lynch	New Delhi: CUP, 2008		
3	Study Speaking: A	Anderson, Kenneth, Joan	New Delhi: CUP,		

	Course in Spoken English for Academic Purposes	Maclean and Tony Lynch	2008		
4	Study Reading: A Course in Reading Skills for Academic Purposes	Glendinning, Eric H. and Beverly Holmstrom	New Delhi: CUP, 2008		
5	Communication Studies	Sky Massan	Palgrave Macmillan		
6	<i>Effective Communication for</i> <i>Arts and Humanities Students</i>	Joan Van Emden and Lucinda Becker	Palgrave Macmillan		

MATRICES, CALCULUS AND LAPLACE TRANSFORMS

4 hrs/week

Text Book:

- 1. Matrices, Frank Ayres JR Schaum's Outline Series, TMH Edition
- 2. Thomas and Finney Calculus and analytical geometry (Addison-Wesley)
- 3. Dr. B. S. Grewal Higher Engineering Mathematics

MODULE I : Matrices

A quick review of the fundamental concepts, Rank of a Matrix, Non-Singular and Singular matrices, Elementary Transformations, Inverse of a Non-Singular Matrix, Canonical form, Normal form. Systems of Linear equations: Homogeneous and Non Homogeneous Equations, Characteristic equation of a matrix. (Relevant sections of Text 1).

(proof of all the theorems are to be excluded.)

MODULE I I : Differential Calculus:

A quick review of limits of function, rules for finding limits, extensions of limit concepts, derivative of a function, differentiation rules, chain rule, rate of change and simple applications of the rules. Extreme values of a function Rolle's Theorem, Mean Value Theorem. (Sections 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2 of Text 2)

MODULE III : Partial Differential Equations

Introduction, formulation of Partial Differential Equation by elimination of arbitrary constants and by elimination of arbitrary function. Solution of first order equations using Lagrange's method.

(relevant sections of Text 3)

MODULE IV : Laplace Transforms

(15 hrs)

(20 hrs)

(17 hrs)

(20hrs)

4 credits

Definitions- transforms of elementary functions, properties of Laplace transforms, inverse transforms- convolution theorem (no proof). (relevant sections of Text 3).

Reference Books:

- 1. S.K. Stein Calculus and analytic Geometry, (McGraw Hill)
- 2. Zubair Khan, Shadab Ahmad Khan Mathematics 1 and

 $Mathematics-II \ (\ Ane \ Books \)$

- 3. Shanti Narayan Matrices (S. Chand & Company)
- 4. N.P.Bali, Dr.N.Ch.Narayana Iyengar-Engineering mathematics Laxmi Publications
- 5. Erwin Kreyszig : Advanced Engineering Mathematics, Eighth Edition, Wiley, India.

QUESTON PAPER PATTERN

Module	Part A	Part B	Part C	Part D
-			-	
l	4	2	2	1
II	4	2	2	1
III	4	2	1	-
IV	4	2	1	1
Total	16	8	6	3

BCA 103 : Basic Statistics

Module I

Introduction to Statistics, Population and Sample, Collection of Data, Census and Sampling, Methods of Sampling Simple Random Sampling (with and without replacement) stratified sampling systematic sampling (Method only), Types of data
quantitative, qualitative, Classification and Tabulation, Diagrammatic representation
Bar diagram, pie diagram; Graphical representation histogram; frequency polygon; frequency curve; ogives and stem and leaf chart.

Module II

Measures of Central Tendency Mean, Median, Mode, Geometric Mean, Harmonic Mean, Percentiles, Deciles. Measures of Dispersion Range, Quartile Deviation, Box Plot, Mean Deviation, Standard Deviation, Coefficient of Variation.

Module III

Idea of Permutations and Combinations, Probability Concepts � Random Experiment, Sample Space, Events, Probability Measure, Approaches to Probability � Classical, Statistical and Axiomatic, Addition Theorem (upto 3 events) Conditional Probability, Independence of events, Multiplication theorem (upto 3 events), Total Probability Law, Baye�s Theorem and its applications.

Module IV

Random variables and distribution functions Random variables, probability density(mass) function, distribution function, mean and standard deviation of different probability density function, moment generating function.

Core Reference

- 1. S.P. Gupta: Statistical Methods (Sultan Chand & Sons Delhi).
- 2. S.C. Gupta and V.K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand and Sons.
- 3. B.L. Agarwal: Basic Statistics, New Age International (p) Ltd.

Additional References

- Parimal Mukhopadhya: Mathematical Statistics, New Central Book Agency (p) Ltd, Calcutta
- 2. Murthy M.N.: Sampling theory and Methods, Statistical Publishing Society, Calcutta.

BCA104 : Introduction to Computers (Core)

Unit-1:

♦Introduction: Parts of ♦ Computer System- Hardware, Software, Data, Users, Different types of computers, Characteristics of computers, Computer Languages - Machine, Assembly Language and ♦ Higher Level languages - 3GL, 4GL, 5GL

Unit-2:

Interacting with Computers:-Input Devices - Key Board, Mouse, Variants of Mouse, Hand held devices, Optical Input devices. Output Devices: Monitors, Sound Systems, and Printers.

Unit-3:

Data Processing: Representation of data, processing of data - The CPU, Memory-different types of RAM and ROM, Factors affecting speed

Unit-4:��

Storing Information in a Computer: Types of Storage Devices - Magnetic Storage Devices �Data storage and organization on a Magnetic Disk, Finding data on a disk -Diskettes - Hard Disks- Tape drives- Optical Storage devices ,Solid state storage devices

Unit-5:

Operating Systems and Networking: Definition of an Operating System - Different types of PC Operating Systems. Computer Networks Uses categories of networks - LAN, WAN, The Internet - Working of Internet -Major Features of Internet. Brief idea of multimedia.

Book of study :

Peter Norton Sintroduction to Computers, Sixth Edition, Published by Tata McGraw Hill

References:

ODE Computer Fundamentals By P K Sinha & Priti Sinha Fourth Edition.

Order Science, ITL Education Solutions limited.

BCA105 : Methodology of Programming and Programming in C (Core)

UNIT 1

Program Concept, Characteristics of Programming, Various stages in Program Development Programming aids Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Programming Techniques � Top down, Bottom up, Modular, Structured - Features, Merits, Demerits, and their Comparative study. Programming Logic- Simple, Branching, Looping, Recursion, Cohesion & Coupling, Programming Testing & Debugging & their Tools.

�Unit 2:

C language basics: C character set, Identifiers and keywords, Data types, Enumeration type, constants, variables, declarations, qualifiers \diamondsuit long, short and unsigned declarations, expressions, symbolic constants, input/output functions, compound statements, arithmetic operators, unary operators, relational and logical operators, assignment operators, increment and decrement operators, Precedence and order of evaluation, conditional operators, bit operators, type casting, \diamondsuit using library functions in math.

Unit 3:

Control flow: If statement, if else statement, nested if ... else statement, switch statements, looping \diamond for loop, \diamond while loop, do \diamond while statements, nested loop structure, break, continue and \diamond go to statements.

Arrays & Strings: Single dimensional arrays, multidimensional arrays, initializing array using static declaration, Searching and sorting of Arrays, Array of Characters, Character arrays and strings, String handling Functions.

Unit 4:

User Defined Functions: Function declaration, definition & scope, recursion, Arrays and functions, call by value, call by reference, Storage Classes: automatic, external (global), static & registers.

Unit 5:

Structures: Definition of Structures, declaration, structure passing to functions, array of structures, arrays with in structures, unions, typedef statements.

Pointers: Pointer Definition, pointer arithmetic, array & pointer relationship, pointer to array, pointer to structure, dynamic memory allocation.

Book of study:

Computer Fundamentals By P K Sinha & Priti Sinha Fourth Edition. B. Kernighan and D. Ritchie, The ANSI C Programming Language, PHI

000000000

BCA106 Software Lab I (Core)

[There will be two questions: the first from Exercises 3 to 5 and the second from Exercises 6 to 10. Exercises 1 and 2 will be included in the viva]

1. Familiarization of Computer System and installation: Demonstration of various units of Computer system, handling of devices, demo on hardware units, Login process, Booting Process, software installation, driver installation,

2. Practicing Operating System Commands: MS-DOS internal & External commands (dir, copy, del, ren, copy con, date, time, chkdsk, mkdir, cd, rmdir, EDIT etc). MS-WINDOWS Quising start menu, desk top, task bar, word pad, note pad, file management- creation, copy, delete, moving of files in directories, selecting and executing a program - Demonstration of editing, compiling and executing a C program using a C compiler.

3. **Programs using Basic Constructs**: Fundamental data types, qualifierslong, short, unsigned, input/output functions \diamondsuit scanf(), printf(), Arithmetic expressions, Evaluation of integer, real and mixed mode arithmetic expressions, truncation effect, type casting, relational and logical expressions, Conditional operators, trigonometric functions- sin(), cos(), tan(), mathematical functions \diamondsuit abs(), sqrt(), round() defined in math.h, printing formatted outputs using width

4. Programs using control structures: if, switch, for, while, do while, nested structures, break and continue. Sample programs should include printing of Fibonacci numbers, prime numbers, check for Armstrong numbers, summation series \diamond exp(x), sin series etc and verification of result using built in functions, printing pyramid like pattern & other similar patterns using nested loops. \diamond

00000000000000

5. Programs using Arrays: Array based programs � Creation of array containing prime numbers, matrix addition, matrix multiplication, transpose of a matrix, array sorting, preparing rank lists based on marks, searching of arrays (linear) for finding price of an item. Static initialization of arrays.

0000000

6. String manipulation programs • reading strings using %s, gets(), getchar(), copying one string into another, counting number of characters, vowels. words etc. using string handling functions. **** Ô

7. User Defined Functions: Programs using return type functions, void type functions, example program using recursive functions, array sorting program using function with call by reference, function to copy one string into

8. Program using structures: array of structures, program using structure containing Rank and of structures. list arrays array preparation

9. Simple program using pointers *ppp*

SECOND SEMESTER

<u>Common Course – English - 2: CRITICAL THINKING, ACADEMIC WRITING &</u> <u>PRESENTATION</u>

COURSE CODE	ENCN3
TITLE OF THE COURSE	CRITICAL THINKING, ACADEMIC WRITING AND PRESENTATION
SEMESTER IN WHICH THE COURSE IS TO BE TAUGHT	2
NO. OF CREDITS	4
NO. OF CONTACT HOURS	90

1. AIM OF THE COURSE

• To develop the critical and analytical faculty of students and to improve their proficiency in reading, writing and presentation.

2. OBJECTIVES OF THE COURSE

- To make the students aware of the fundamental concepts of critical reasoning and to enable them to read and respond critically, drawing conclusions, generalizing, differentiating fact from opinion and creating their own arguments.
- To assist the students in developing appropriate and impressive writing styles for various contexts.
- To help students rectify structural imperfections and to edit what they have written.
- To equip students for making academic presentations effectively and impressively.

3. COURSE OUTLINE

MODULE – I

Critical Thinking

18 hours

Introduction to critical thinking – Benefits - Barriers – Reasoning - Arguments -Deductive and inductive arguments – Fallacies - Inferential comprehension-Critical thinking in academic writing - Clarity - Accuracy – Precision - Relevance

MODULE – II

Research for Academic Writing and the Writing Process 18 hours

Data collection - Use of print, electronic sources and digital sources -

Selecting key points - Note making, paraphrasing, summary – Documentation -Plagiarism – Title – Body paragraphs - Introduction and conclusion – Revising -Proof-reading

MODULE – III

Accuracy in Academic Writing

Articles - Nouns and prepositions - Subject-verb agreement - Phrasal verbs -Modals - Tenses - Conditionals – Prefixes and suffixes – Prepositions - Adverbs – Relative pronouns - Passives - Conjunctions - Embedded questions - Punctuation – Abbreviations

MODULE – IV

Writing Models

Letters - Letters to the editor - Resume and covering letters - e-mail - Seminar papers - Project reports - Notices - Filling application forms - Minutes, agenda -Essays

MODULE-V

Presentation Skills

18 hours

18 hours

18 hours

Soft skills for academic presentations - Effective communication skills – Structuring the presentation - Choosing appropriate medium – Flip charts – OHP -PowerPoint presentation – Clarity and brevity - Interaction and persuasion -Interview skills –Group Discussions

4. CORE TEXT

Marilyn Anderson, Pramod K Nayar and Madhucchandra Sen. *Critical Thinking, Academic Writing and Presentation Skills*. Pearson Education and Mahatma Gandhi University.

126

DISCRETE MATHEMATICS

Text Books :

4 hrs/week

- 1. Petergray Logic, Algebra and databases (chapter 3), Affiliated East West press pvt Ltd.
- 2. Robert J mcEliece, Robert B Ash and Carol Ash Introduction to discrete mathematics (chapter 1,2 and 4), Mc.Graw Hill.

MODULE I : Preliminaries

Basic set Theory, terminology and notation, Venn diagrams, truth table and proof. Functions and relations, partial orderings and equivalence relations, mathematical induction. An application of Hamming codes.

MODULE II : Combinatorics

The theory counting. The multiplication rule, ordered sample and permutations, unordered samples without repetition, permutations involving indistinguishable objects, multinomial coefficient, unordered samples with repetition, permutation involving indistinguishable objects.

MODULE III : Propositional Calculus

Proposition, compound proposition, truth table for basic operators, connectives, theorems from Boolean algebra, De-Morgan's law, normal forms, rules of inference, chain rule and modusponens, chains of inference, tautology, proof by adopting a premise. Reductio- adabsurdum, proof by resolution.

MODULE IV : Graphs and Algorithms

Leonhard Euler and the seven bridges of Konigsberg, trees and spanning trees, minimal spanning trees, binary trees and tree searching. Planar graphs and Euler's theorem, the shortest path problem, Dijkstras Algorithm, two "all-pairs" Algorithm, Floyd's Algorithm and Marshal's Algorithm.

Reference Books:

1. S. Lipschutz : Set Theory and related topics (Second Edition), Schaum Outline Series, Tata McGraw-Hill Publishing Company, New Delhi.

4 credits

(15 hrs)

(17 hrs)

(25 hrs)

(15 hrs)

- 2. R.G..Stoll Set Theory and Logic
- 3. P.R. Halmos Naive Set Theory, Springer
- 4. John Clark & Derek Allen Holton A first book at graph theory (Allied Publishers)
- 5. Douglas B west Introduction to Graph Theory, Pearson Education

QUESTON PAPER PATTERN

Module	Part A	Part B	Part C	Part D
Ι				
II				
IV				
T . 4 . 1	1(0	(2
I otal	16	ð	0	5

BCA203: Accounting and Programming in COBOL (Core)

Unit-1 : Accounting Principles: Accounting concepts, conventions, Double Entry systems, Journal and Journalizing, Ledger- Posting and balancing, Trial balance

Unit 2 : Final accounts: Manufacturing account, Trading account, Profit and Loss account, Balance sheet.

Unit 3: Introduction to COBOL: History of COBOL, COBOL Coding sheet, Basic structure of COBOL programs, Character set, COBOL words and rules, Data names, Identifiers, Literals, Figurative constants, IDENTIFICATION DIVISION-entries, ENVIRONMENT DIVISION - CONFIGURATION SECTION, DATA DIVISION - WORKING-STORAGE SECTION - Level numbers and structure - data entries-VALUE clause, PICTURE clauses- Edited Picture clauses.

Unit 4: PROCEDURE DIVISION : Need for Paragraph, Input-Output Verbs ♦ DISPLAY and ACCEPT, Data Movement Verb ♦ MOVE, Arithmetic verbs- ADD, SUBTRACT, MULTIPLY, DIVIDE, COMPUTE- ROUNDED option - ON SIZE ERROR option, Operator precedence, conditional verb-IF statement, IF-ELSE statement, Nested IF statement, Conditions in IF statement- class, sign, relational, negated, compound, condition name condition, Sequence control verbs-GO TO, STOP RUN, CORRESPONDING option ♦ MOVE ♦ ADD - SUBTRACT, Table Handling-Arrays and subscripting- one, two dimensional tables, PERFORM statement - five different formats, ♦ GO TO with DEPENDING ON option. Programs based on above verbs.

Unit 5: ♦SEQUENTIAL FILES AND FILE PROGRAMS :Various types of files, File program entries in various divisions- ENVIRONMENT DIVISION, INPUT-OUTPUT SECTION- DATA DIVISION- FILE SECTION entries- Level numbers, Level indicators- FD - SD, FILLER clause, PROCEDURE DIVISION for sequential files-OPEN, READ, WRITE, REWRITE, CLOSE verbs, various File opening modes-INPUT, OUTPUT, EXTEND and I-O modes, Simple SORT verb, Simple MERGE verb, Detailed structure of COBOL programs, SEQUENTIAL FILE program including sorting and merging. Concept of Indexed sequential file and Random access files.

Book of study:

1. Financial Accounting: Balakrishnan Nair.

2. COBOL Programming: M.K Roy, D.G Dastidar, - Tata McGraw Hill Second

AAAA Edition.

References:

- 1. Accountancy : S P Jain , K L Narang
- 2. Advanced Accountancy (Vol.1) : S N Maheshwari, S K Maheshwari
BCA204 : Data Structures (Core)

Unit 1:

♦ Concept of Structured data: ♦ Data structure definition, Different types and classification of data structures, Arrays ♦ representation of array in the memory, linear array operations, Bubble sort, Selection sort, linear search, binary search, sparse matrix.

Unit 2: Stacks and Queues: organization and operation on stacks � Conversion between infix to postfix & prefix representations- Expression Evaluation - Organization and operations on queues-circular queue-multiple stacks and queue - � Applications � of stacks and queues.

Unit 3:

Linked list: Concept of dynamic data structures, linked list, types of linked list, linked list using pointers, insertion and deletion � examples, circular list � doubly linked lists, garbage collection.

Unit 4:

Trees: Concept of recursion, definition of - trees, binary trees, strictly binary trees, complete binary tree and Binary search tree, Creation of binary search tree, traversing methods - examples.

<u>Unit 5:</u>

File organization: File organizations- sequential, random files, linked organization, inverted files, cellular partitioning, hashing function

Book of study :

A Practical Approach), G.S Baluja

Galgotia Publications

References:

- Introduction to data structures in C , Ashok N. Kamthane, Person Education
- Theory and Problems of Data Structures, Schaum Southine Series, Seymour

Lipschutz

Data structures using c and C++ , Tanenbaum

BCA205 : Fundamentals of Digital Systems (Core)

Unit 1:

♦Number Systems: Base of a number system, Positional number system, Popular number systems(Decimal, Binary, Octal and Hexadecimal), Counting in binary number system, Conversion-Decimal to Binary, Binary to Decimal, Decimal to Octal, Octal to decimal and binary, Decimal to hexadecimal, Hexadecimal to decimal, Binary and octal, Concept of ♦ binary addition and subtraction, Complements ♦ in ♦ binary ♦ number ♦ systems, 1^s Complement, 2^s Complement and their applications, Number representation in memory- bi-stable devices, Signed magnitude form, Representation of real numbers, BCD numbers- concept and addition, Concept of parity bit.

Unit 2:

Boolean Algebra and Gate Networks: Logic gates- AND, OR, NOT, NAND and NOR Truth tables and graphical representation, Basic laws of Boolean Algebra, Simplification of Expressions, De Morgan s theorems, Dual expressions, Canonical expressions, Min terms and Max terms, SOP and POS expressions, Simplification of expression using K-MAP (up to 4 variables), Representation of simplified expressions using NAND/NOR Gates, Don t care conditions, XOR and it s applications, parity generator and checker.

Unit3:-

◆Sequential and Combinational Logic. Flip flops- Latch, Clocked, RS, JK, T, D and Master slave, Triggering ◆ of flip flops, Counters- Synchronous and asynchronous, BCD, Ripple counters, Half adder, Full adder(need and circuit diagram), Encoders, Decodes, Multiplexers and Demultiplexers(working of each with diagram), Analog to digital and digital to analog converters (Diagram and working principle).

Unit 4:-

The Memory Elements: OOOO Concept of Registers, Shift Registers, Flip flops as building blocks of memory, RAM, ROM, organization.

Book of study :

M.M.Mano-Digital Logic and Computer design

References:

- -
- 1. Thomas C Bartee- Digital computer Fundamentals
- 2. Floyd- Digital Electronics
- 3. Malvino & Leach- Digital Principles and Applications

-

BCA206 : Software Lab II (Core)

(There will be two questions; the first from COBOL and second from Data structures.)

Ø

Business Data Processing Using COBOL (only business problems)

- 1. Programs using ADD, SUBTRACT, MULTIPLY, DIVIDE, COMPUTE VERBS
- 2. Programs using IF, IF.. ELSE, GO TO
- **3.** Programs using PERFORM statements.
- **4.** Programs using sequential file processing **(**) only Accounting problems are to be given as listed below.
 - To create a sequential file to store journal entries. The structure of the file may be Date, Account Name to be debited, Account Name to be credited, Amount.
 - Using the journal file created above, display total debit amount, total credit amount, Debit balance or credit balance for a particular account name entered through the keyboard. (Balance is the Difference of debit total and credit total Debit balance when debit total exceeds credit total, Credit balance otherwise)
 - iii) Preparing a sequential file containing Salary statement using an input file containing employee pay details.
 - To Display the summary of total deposits and total withdrawals in a day using a bank transaction file containing date, Account no, Type of transaction (D-deposit, W-withdrawal) and Amount.

 v) Preparing Electricity Bill using a sequential file containing Consumer No, Name, Previous Reading and Current Reading. An appropriate tariff structure may be assumed.

II. Data Structures using C. (3 hours per week)

- 1. Array search and sort Bubble sort, Selection sort, linear search, binary search, sparse matrix, polynomial addition.
- 2. Stack implementation, Application of stacks � Conversion of infix expression to postfix, expression evaluation.
- 3. Queue implementation, Implementation of circular queue.
- 4. Linked list- implementation, concatenation etc., circular list and doubly linked list implementation, implementation of stacks and queue using linked lists.
- 5. Creation and traversal of binary search trees.

SEMESTER 3

BCA301 : Advanced Statistical Methods

Module I

Theoretical distributions. Discrete distribution(binomial and Poisson), mean, variance, moment generating functions and fitting of data. Continuous distribution- normal distribution only. Area under the normal curve-related problems,.

Module II

Sampling Distributions \clubsuit definition, Statistic, Parameter, Standard Error, Sampling Distributions of Mean and Variance, χ^2 , t and F (without derivation), properties, Inter relationships.

Module III

Concepts of Estimation, Types of Estimation � Point Estimation, Properties of Estimation � Unbiasedness, Efficiency; Consistency; Sufficiency; Interval Estimation, Interval Estimation for Mean, Variance and Proportion

Module IV

Testing of hypothesis- Statistical hypothesis, Simple and composit hypothesis Null and Alternate hypothesis, Type I and Type II errors, Critical Region, Size of the test, P value, Power, Neyman Pearson approach , Large Sample test � Z test, Chi-Square test-goodness of fit, test of independence.

Book of study :

Fundamentals of Mathematical Statistics -S C Gupta and V K Kapoor

BCA302 : Design and Analysis of Algorithms (Core)

Unit I:

\diamond \diamond \bullet \diamond \bullet \diamond \bullet \bullet \bullet

Unit II:

Output the sort, performance measurement of quick sort, Selection, Saracen search, Saracen search, Selection, Selec

Unit III:

Greedy method
 General method, Knapsack
 problem, Job sequencing with dead lines, Minimum cost spanning
 trees
 Prims algorithm, Kruskals algorithm, Optimal merge
 patterns, Single source shortest path, Optimal binary search trees.

Unit IV:

Openation of the seneral method, multistage graphs, all-pairs shortest path, Single source shortest path, 0/1 Knapsack problem, Traveling Sales person problem.

Unit V:

CONTROL OF SET UP: A search techniques - BFS and traversal, DFS and traversal, Bi-connected components and DFS,

Backtracking � General method, 8-queens problem, Sum of subsets problem, Graph coloring, Hamiltonian cycles.

Book of study:

OOO Ellis Horowitz, Sartaj Sahni, Sanguthevan

Rajasekharan

Computer algorithms/C++ (Second Edition)
Universities Press.

Reference:

1. Anany Levitin

Introduction to design and analysis of algorithms Addison Wesley Low price edition.

2. Richard Neapolitan, Kumarss Naimipour Foundation of Algorithms using C++

BCA303: Computer Organization and Architecture (Core)

Unit 1:

Functional units of a computer, Basic operational concepts, Bus structure, Addressing methods, Memory locations and addresses, Instructions and instruction sequencing, Instruction execution.

Unit 2:

Central Processing Unit, General Register Organization, Stack Organization, Instruction Formats, Instruction Classification, Addressing modes.

Unit 3:

Main Memory, Organization of RAM, SRAM, DRAM,, Read Only Memory-ROM,PROM,EROM,EEPROM, Auxiliary memory, Cache memory, Virtual Memory, Memory mapping Techniques.

Unit 4:

Parallel Computer Structures: Introduction to parallel processing, Pipeline computers, Multi processing systems, Architectural classification scheme-SISD, SIMD, MISD, MIMD.

Unit 5:

Pipelining and Vector processing, Introduction to pipelining, Instruction and Arithmetic pipelines(design) Vector processing, Array Processors.

Book of study :

M.M Mano-Computer Systems Architecture

Kai Hwang and F A Briggs-Computer Architecture and parallel processing

Reference

Hamachar-Computer Organization

BCA304: Computer Graphics (Core)

Unit 1:

Practical applications of Computer Graphics: Display devices, Raster Scan Display, DVST, Flat panel, LCD, Raster Scan systems, Random Scan systems. Input devices, Hard copy devices, Graphics software.

Unit 2:

Points and lines: Line drawing algorithms, Simple DDA. Circle generation, Mid point circle algorithm, Character generation.

Unit 3:

2D Transformations: Translation, Rotation, Scaling A Matrix representation and homogenous coordinates, composite transformation, raster methods for transformations. Two-dimensional viewing: viewing pipeline, concept of window and view port, window to viewport transformation. Clipping operations � point clipping, line clipping, Cohen Sutherland line clipping, polygon clipping, Sutherland-Hodgeman polygon clipping.

Unit 4:

Structure Concepts: Basic structure functions, setting structure attributes, Editing structures. **Graphical User interface and interactive input methods:** Input of graphical data, interactive picture construction techniques.

Unit 5:

Three-dimensional concepts: Three dimensional display methods, three dimensional graphics packages. Three dimensional object representations: Polygon surfaces, sweep representations, constructive solid geometry methods, octrees and quad trees.

Book of study :

Hearn D & Baker MP, Computer Graphics, PHI pvt Ltd

References

•

- Newman W M & R F Sproul, Principles of Interactive Computer Graphics, Mc-Graw Hill Book Company.
- 2. Plastock R & Xiang Z, Theory and problems of computer Graphics, Schaum Series, McGraw Hill bok Company.

BCA305 :Object Oriented Programming and C++ (Core)

Introduction- Object Orientation- object oriented development-Object oriented Methodology-Object oriented Models-Object oriented themes-Modeling-Objects and classes concepts-Links and association concepts-Generalization and Inheritance-state modelinginteraction modeling

Unit 2:

Object Oriented language C++: Basic concept of object oriented programming -benefits of oops-Structure of C++ Program-Basic, derived and user defined data types-Symbolic constants-operators in C++ - Control Structures -Functions in C++-The main function, function prototyping-call by reference-return by reference- inline function-function overloading-friend and virtual functions,

Unit 3:

classes and objects-specifying a class - Defining member functions - Nesting of member functions - Private member functions - arrays within a class - static data members - static member functions - Arrays of objects-objects as function arguments

Unit 4: Constructors and Destructors- Constructors- Parameterized Constructors-Multiple constructors - Copy constructor - Dynamic constructor-Destructors - Operator overloading & Type conversions. **Inheritance**-Defining derived classes-Single, Multiple, Multilevel, Hierarchical ***** and hybrid inheritance- private, public, protected inheritance-virtual base classes-Abstract classes- Constructors in derived classes- nesting of classes.

Unit 5: Pointers-Virtual functions and polymorphism-Pointers-Pointers to objects-this pointer-pointer to derived classes-virtual functions-Pure virtual functions-C++ streams-Stream classes-Unformatted and Formatted console I/O operations- Managing output with manipulators. Manipulating strings.

Book of study :

Object Oriented Modeling and Design with UML, Second Edition

Object oriented Programming with C++, Fourth edition By E. Balaguruswamy

References:

♦♦ Let Us C++ ,Yashwant Kanetkar, Bpb Publications

John R Hubbard, Programming with C++, Shaum s Outline series.

♦♦ Objected-Oriented Programming in C++ , Rajesh K Shukla, Wiley India.2008 Edition

♦ Venugopal, Rajkumar, Ravishankar, *Mastering* C++, Mc Graw Hill

BCA306 : Software Lab III (Core)

[There will be two questions one from 1 to 4 and second from 5 to 8]

- 1. Programs based on class, objects and manipulation of objects using member functions
- 2. Programs based on friend functions, passing objects as arguments to function.
- 3. Programs based on array of objects.
- 4. Programs based on function overloading, Default arguments.
- 5. Programs based on operator overloading (binary, unary) using member functions and friend functions.
- 6. Programs based on constructors, different types of constructors- copy constructor, default constructor.
- 7. Programs based on Inheritance, different types of inheritance.
- 8. Programs using virtual functions and polymorphism, this pointer

FOURTH SEMESTER OPERATIONS RESEARCH

4 hrs/week

Text Book:

Belly E Gillet – Introduction to Operations Research (A Computer Oriented Arithmetic Approach) (Tata Mc. Graw Hill)

MODULE I : Basics of O.R.

The nature and uses of O.R- mach concepts and approaches of O.R- models in O.R.

MODULE II : Linear programming problems

Mathematical formulation of a L.P.P. General linear programming problems, solution of a L.P.P, graphical method for solving a L.P.P.

Simplex Method: Stack and surplus variables- reduction of any feasible solution to a basic feasible solution. Unbounded solution. Optimality conditions- artificial variable techniques- Big M method.

MODULE III : Transportation & assignment Problems

Transportation model- solution by simplex method- north west corner rule, lowest cost entry method, vogel method, MODI method, degeneracy, assignment problems.

MODULE IV: Game Theory

Two persons zero sum games, pure and mixed strategy with saddle point, solution of pure strategy games, solution of mixed strategy problems by arithmetic method. Principle of dominance.

Reference Books:

- 1. V.K Kapoor Operations Research
- 2. Kanti Swarup, P.K Gupta and Man Mohan Operations Research, Sultan Chand & Sons
- 3. K.V Mital and C. Mohan Optimization Methods in Operations Research and System Analysis
- 4. J. K Sharma Operations Research Theory and Applications, Macmillan
- 5. B. N. Mishra, B. K. Mishra Optimization Linear Programming Ane Books

QUESTON PAPER PATTERN

4 credits

(17 hrs)

(20 hrs)

(25 hrs)

(10hrs)

Module	Part A	Part B	Part C	Part D
Ι				
II				
III				
IV				
Total	16	8	6	3

BCA402 : Microprocessors and PC Hardware (Core)

Unit1:

Introduction to the concept of 8085 microprocessor: Intel 8085, Instruction cycle, Timing diagrams, Instruction set of 8085, Addressing modes, Status flags, Intel 8085 Instructions.

Unit2:

Introduction to the concept of 8086 microprocessor: Introduction, Pin-out Diagram, Operating modes, Operation of 8086, Registers, Interrupts, Bus Cycle, Addressing modes.

Unit3:

Motherboard : **ORDER** Components of motherboard-Chip set introduction, Super I/O chip, ROM BIOS, System buses- Processor Buses, Memory buses, I/O Bus(ISA,PCI Local Bus, AGP, USB), Motherboard selection criteria.

Unit4:

Hard disk: Hard Disk drive, Definitions, Hard Disk operations, Disk formatting, Basic hard disk drive components, Hard disk features, Hard disk drive installation procedure, FAT Disk, VFAT and log file names, FAT 32, NTFS.

<u>Unit5:</u>

Types of memory: Physical Memory, Memory modules:- SIMMs, DIMMs, RIMMs, Brief study of conventional base memory, Upper memory area, High memory area, Extended memory, Expanded memory.

Book of study :

- 1. B RAM -Fundaments of microprocessors and micro computers
- 2. Lotia and Nair- Modern all about motherboard.
- 3. Lotia and Nair- Modern all about Hard Disk.

References:-

1. R S. Gaonkar- Micro processor Architecture, Programming and applications with 8085.

- 2. Venugopal and Ravikanth- Introduction to assembly language programming in 8086.
- 3. Scottmuller with Creigzacker- Upgrading and repairing PCs.

BCA403 : System Analysis And Design (Core)

Unit I

Information systems concepts, Business information systems; Describing the business organization **(**) organization chart , organization function list ; information system levels **(**) - operational, lower, middle, top management; the system development life cycle concepts; hardware and software end products.

Life cycle activities- life cycle flow chart, task, management review, baseline specifications, role of system analyst.

Unit II

Basic tool of system analysis: ♦ identification codes ♦ definition, need for codes, code plan, code dictionary, common type of codes, forms design ♦ basic parts of form, style and types of form, principles of form design Tools for structure analysis and design: Types of basic charts, decision tables, decision trees, structured English, data flow diagram, data dictionary, system flow charts, flow charting symbols, information oriented flow charts, process oriented flow charts, HIPO charts.

•

Unit III

Study phase: Study phase activities, information service request, initial investigation, fact finding techniques, fact analysis techniques, steps in feasibility analysis, study phase report.

Unit IV

Design phase: Design phase activities, structure design, input design- input data, input media and devices, output design, design phase report.

Unit V

Development phase: Development phase activities, bottom up and top down computer program development, training- programmer, operator, user trainings ; convertion; change over plan; PERT; steps in computer program development; structured programming; development phase report.

Book of study :

Elements Of System Analysis Marvin Gore & John Stubbe, Galgotia Book Source.

References

System Analysis And Design � Elias M Awad , Galgotia Book Source. Software Engineering Concepts � Richard Fairley , Tata Mc Graw Publication.

Unit OI: Introduction: Characteristics of database approach, Data base users-DBA, Data base designers and end users, Advantages of using DBMS, Data Modes- Schemas and instances, DBMS architecture and data independence. DBMS language-DDL, DML,DCL Data Base system environment, DBMS Component and modules.

ER Modeling- Introduction- Entity types, Entity sets, Attributes and Keys, Relationship Types, Relationship Sets relationship instances, Constraints on relationship types, Weak entity types, sample ER diagrams.

Unit-II: Relational Data Model: Relational model concepts domains, attributes, tuples and relations, characteristics of relations. Relational Model constraints Relational Databases and relational data base schemas, entity integrity, referential integrity and foreign keys with examples.

Relational algebra and Relational calculus:

Relations Operations- SELECT, PROJECT, , UNION, INTERSECTION, The CARTESIAN PRODUCT, JOIN, EQUIJOIN, Aggregate functions. Examples of queries in Relations Algebra Tuple relations calculus, Domain relational calculus.

Relational Data base design using ER-to-Relational mapping.

Unit-III : SQL: Data definition commands- CREATE, ALTER, DROP, Adding constraints, Basic SQL queries-INSERT, SELECT, DELETE, UPDATE Ordering of rows UNION, EXCEPT, INTERSET Substring comparisons using LIKE operator, BETWEEN operator, Complex Queries-Nested queries, EXISTS and UNIQUE functions, NULL values, Renaming of attributes and joining of tables, Aggregate functions and grouping, Managing views

Unit IV: Data Normalization:- Informal Design Guide lines for relation schemas, functional dependencies, Normal forms- first, second and third normal form, Boyce- Codd normal form.

Indexing structures for files- types of single level ordered indexes.

Unit V: Transaction processing:- Introduction to transaction processing, Transaction and system concepts, Desirable properties of transactions. Concurrency Control:- Locking techniques for concurrency control.

Database Security and Authorization:- Types of security, control measures, database security and the DBA, Access protection, User accounts and database audits, Access Control based on granting and Revoking privileges.

Book of study :

Ramez Elmasri and Shamkant B. Navathe, �Fundamentals of Database Systems Pearson Education, 5th edition

References:

- 1. C.J Date, An Introduction to Database systems
- 2. Reghu Ramakrishnan, Data base Management Systems, Mc Graw Hill international Edition.
- Bipin Desai, An Intriduction to Database Systems Galgoria Publications, 1991
- -
- -

BCA405 : Visual Programming Techniques (Core)

Unit 1

Visual Basic Basic Concepts: Getting Started with Visual Basic 6, Understanding Visual Basic Projects, Designing the user interface, Putting your Forms to Work with controls, Mastering Menus and Toolbars.

Unit 2

♦ Programming in Visual Basic : Visual Basic Code Basics, Using Visual Basic Variables, Using the Visual Basic Debugging ♦ Tools, Handling Runtime Errors.

Unit 3�

Objects and Classes :Creating Objects and Classes, Advanced Class Concepts, Working with objects and collections.

Unit 4

Working with other Applications & Database Access: Mastering the Visual Basic Data Control, Creating Queries in Visual Basic, Mastering Jet DAO.

Unit 5

Advanced Data Access Methods & Report generation : Using

Advanced Data Access Methods � ADO, OLEDB; Using Crystal Reports,

Using the Package and Deployment Wizard.

Book of study :

Peter Norton s Guide to Visual Basic 6 by Peter Norton and Michael Groh, Techmedia Publications -Chapters:

References:

1. Visual Basic 6 from the Ground Up by Gary Cornell, Tata

McGraw-Hill

2. Ising Visual Basic 6 by Bob Roselman, Richard Peasley and Wayne

Prunchiah, PHI

BCA406: Software Lab IV (Core)

[There will be two questions, the first one from Group I and second from Group II]

I SQL Commands (2 hours)

1. Data definition commands - CREATE, ALTER, DROP, Adding Constraints
Primary key, foreign key, unique key, check, not null.

2. **Basic SQL queries** INSERT, SELECT, DELETE, UPDATE, Using multiple tables, ordering of rows using ORDER BY option, Set operations using UNION, EXCEPT, INTERSECT, Substring Comparison using LIKE operator, BETWEEN operator.

3. **Complex Queries** Nested Queries, EXISTS and UNIQUE/DISTINCT functions, NULL values, Renaming of attributes and Joining of tables, Aggregate functions and grouping.

4. Managing views, Simple stored procedures.

5. Data Control commands - Access Control and Privilege commands.

II Visual Basic (4 hours)

6. Designing User Interface using-List Box, Combo Box, Image and Picture Box,

OCONTRACTOR OF CONTRACTOR OF

♦ 7. Creating Menus- Creating Menus and writing Codes, Linking Menus with SDI

ODE forms, Creating toolbox and access it for loading and working forms.

8. Database Connectivity using Controls - Designing user interface with forms

WARPHONE WARPHONE WA

9. Database connectivity using Object models - Creating Database connectivity
Optimized
Optimized</l

by DAO Object model and Connectivity Using
DAO Object model by OLE
DE
DO
DE

♦♦♦ 10. Creating Reports - Create reports using Data Report in VB and also using

Crystal report.

♦11. Package and deployment Wizard - Package, Deploy and Scripting

SEMESTER 5

BCA501 : COMPUTER NETWORKS

UNIT -1:

Need of network. Network classifications-LAN, MAN, WAN, wireless networks & Internet. Data and signals-analog and digital, periodic analog signals, digital signals, bit rate, baud rate, bandwidth . Transmission impairments- attenuation distortion and noise. Data communication protocols and standards, Network models - OSI model-layers and their functions. TCP/IP protocol suite.

UNIT-2

Bandwidth utilization Multiplexing: FDM, TDM, spread spectrum. Transmission Media- guided media and unguided media. Switching: message, Circuit and packet switched networks, datagram networks, virtualcircuit networks.

UNIT-3

Hop to Hop Delivery. Error Detection and Correction Type of Errors, Redundancy, Detection ,Correction, Forward Error and Retransmission. Coding -Block Coding(Parity Chek Code and Hamming Code) and Cyclic Codes. Framing, flow and error control, Protocols - Noiseless channels (Simplest , Stop and Wait) and Noisy channels(Stop and Wait and Piggy Backing).

-UNIT-4

Multiple Access Protocols . Random Access-ALOHA, CSMA. Wired LANs-IEEE standards, standard Ethernet, wireless LANs-Bluetooth, Wireless Lan- Cellular Telephony-Frequency Reuse Principle , Transmitting, Receiving, Handoff, Hard Hand off, Soft Hand off, Roaming . Cellular Telephony Generations First, Second and Third generations. Satellite Networks Geo, Meo, Leo.

UNIT-5

Host- To-Host Communication . Network Level Logical addressing-IPv4 addresses, IPv6 addresses, Internet protocol-IPv4 and IPv6, Process to

Process Delivery Connectionless and Connection Oriented Service : UDP, TCP. Congestion control, quality of service. Client Server Programs.
Name space, domain name space, Remote logging, Electronic mail, file transfer.

Book of study: Data communication and Networking (fourth edition)-B. A. Forouzan

BCA 502 : Operating Systems

Unit 1<u>:</u>

Introduction: OS Definition, Functions, OS as a resource manager, types of OS Evolution of OS, Operating System Operations, Operating System Services, User Operating System Interface, System Calls, Types of System Calls.

Unit 2<u>:</u>

Process: Basic Concepts, Process Scheduling, Operations on Processes, Inter process communication, Process Scheduling - Scheduling Criteria, Scheduling Algorithms, Multiple Processor Scheduling.

Unit 3:

Process Coordination : Synchronization - The Critical Section problem, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors. Dead Locks : System Model, Dead Lock Characterization, Methods of Handling Dead Locks, Dead Lock Prevention, Dead Lock Avoidance, Dead Lock Detection, Recovery from Dead Lock.

Unit 4:

Memory Management: Memory Management Strategies -Swapping, Contiguous memory allocation, Paging, Segmentation. Virtual Memory Management- Demand paging, Page Replacement

Unit 5:

Storage Management :- File System :- File Concept, Access Methods, Directory Structure, protection, Implementing File Systems :- File System Structure, Directory Implementation, Allocation Methods, Free Space Management, Efficiency and Performance, Recovery.

Book of study :

Operating System Principles, Seventh Edition, Abraham Silberschatz, Peter Galvin and Greg Gagne, John Wiley Operating Systems- By William Stallings

Reference:

Operating Systems- By Milan Kovic (TMH)

BCA 503: Java Programming

Unit 1:

Objectorientedprogramming-Encapsulation-Inheritance-Polymorphism-GenesisofJava-characteristicsofjava-structure-identifiers-operators-variables-literals-datatypes-Arrays.ControlStatements-selectionstatements-iterativestatements-jumpstatements - Loops- while loop-do while loop- for loopImage: Control loopImage: Control loop

V

Unit 2:

Classes-declaration Oobject references-instantiation- method declaration-method calling O this operator- constructor- method overloading-constructor overloading-method overriding-inheritance-super class-dynamic method dispatch-final-static-abstract classes O String Handling.

Unit 3:

Packages - creating packages-using packages-Interfaces-Exception Handling Techniques-try-catch-throw-throws-finally -Multithreadingcreation of multithreaded program-Thread class-Runnable interfacethread priorities.

-Unit 4:�

Event Handling-Delegation Event Model-Event Classes-Sources of Events-Event Listeners- AWT: Frame Class-AWT Controls: Label-Button-Checkbox-List-Choice control-Text Field-Text Area- Lay out Managers.

Unit 5

Applet Fundamentals -applet tag-applet life cycle-passing parameters to applets- working with graphics Line-Rectangle-Oval Arc- color setting-I/O Streams: DataInputStream-DataOutputStream-BufferedReader-BufferedWriter classes

Book of study :

Java2 The Complete Reference Seventh Edition: Patrick Naughton

Reference:

- 1. Programming with java �.E. Balagurusamy
- Core Java Volume 1- Fundamentals eighth edition Cay S Horstmann & Gary Cornell
- 3. Java 6 Programming Black Book 2007 Edition Dreamtech press-

BCA504: OPEN COURSE

BCC'506 – Internet, Web Designing and Cyber Laws [Not Applicable For BCA Students]

Unit I

Internet – Introduction, Basic Communication, Local Area Network, Packet Switching, Internet: A Network of Networks, ISPs and Network Connections, IP Address, Transaction Control Protocol (TCP), Domain Names.

Unit II

Internet Services: Electronic Mail, Bulletin Board Services (Network News), Browsing the World Wide Web, Automated Web Search (Search Engines), Audio and Video Communication, Faxes and Files (FTP), Remote Login.

Unit III

Facilities for Secure Communication, Electronic Commerce and Business.

Unit IV

Web Programming – Introduction to HTML, Creating Web Pages, Formatting Tags, Font, Lists, Table, Form, Marquee, Frame Tags, Creation of simple websites.

Unit V

Cyber Crimes- Computer Crime, Nature of Crimes, Penalty for damage to computer, Computer system, Tampering with Computer source documents, Hacking, Computer related offences, Theft, The Language of Cyber space.

Text Books

1. "The Internet", Douglas. E. Comer, Prentice hall of India – Third Edition

2. HTML Black Book

3. "Cyber Law Crimes", Barkhs and U. Rama Mohan, Asia Law House, New Edition References

1. "Internet Complete Reference, Harley Hahn.

BCA505: Software Lab � V

Part I

Applet Programs : Graphics- AWT controls- Event Handling

Part II (using class and read inputs from keyboard)

Java Programs: A A A A MethodOverloading- MethodOverridinginheritance-abstract class A interfaces- packages-Exception Handling-Multithreading.

BCA506: SOFTWARE DEVELOPMENT LAB I (Mini Project)

Analysis & Design course, using VB and SQL Server/ORACLE..

SEMESTER 6

BCA601: WEB TECHNOLOGY

UNIT I: INTERNET- Basics of internet- Addresses & names for the internet, Web objects & site, E-mail, WWW, File transfer, The TELNET, The USENET, Gopher, Wais, Archie, Veronica, Internet chat, Web server, Proxy server, Fast ready connections to the Web, Web Browser.

UNIT II : HTML, Basic HTML, Document Body Text, Hyperlink, Adding more formatting, LISTS- Using Colour & images- Tables, Multimedia objects, Frames, forms- MARQUEE.

UNIT III: ODHTML, Cascading , style sheets, Introduction using styles, Working simple examples, Defining your own styles, Properties & values in styles, Style sheets A worked example, Formatting blocks of information

UNIT IV: Java script Introduction to Java script Basics Variables
String manipulation Mathematical Functions Operations Arrays
Functions Objects in Java script- regular expressions Built- in objects
Data validation Messages & Confirmation Status bar- Writing to a different frame.

UNIT V: PHP Introduction to PHP, Including PHP in a page, Datatypes

, Program Control, Arrays , User defined functions, Built-in Functions ,

Regular expressions Using files

Book of study :

- 1. Internet & Web Technologies, Raj Kamal, Tata Mc Graw Hill
- 2. Web Programming, Chris Bates, 3rd Edition; Pub: John Wiley & Sons

Reference 1.HTML Black Book, Steven Holzner, Dreamtech Publishers

BCA602: Software Engineering

Unit I: Introduction to Software Engineering Definition, Program Vs Software, and Software process, Software Characteristics, Brief introduction about product and process, Software process and product matrices.

Software life cycle models **(**) Definition, Waterfall model, Increment process models, Evolutionary process models, Selection of a life cycle model.

Unit II: Software Requirement Analysis and Specification � Requirements Engineering � type of requirements, Feasibility Studies, Requirement Elicitation, Various steps for requirement analysis, Requirement documentation, Requirement validation, an example to illustrate the various stages in Requirement analysis. Project planning-Size estimation, cost estimation, the constructive cost model (COCOMO)

Unit III: Software Design - Definition, Various types, Objectives and importance of Design phase, Modularity, Strategy of design, Function oriented design, IEEE recommended practice for software design descriptions. Steps to Analyze and Design Objected Oriented System. Software Reliability � Definition, McCall software quality model, Capability Maturity Model

(Chapter 5 and 7)

Unit IV: Software Testing ◆ What is testing?, Test, Test case and Test Suit, Verification and Validation, Alpha, beta and acceptance testing, functional testing, techniques to design test cases, boundary value analysis, Equivalence class testing, decision table based testing, cause effect graphing technique, Structural testing ◆ path testing, Graph matrices, Data flow testing; Levels of testing ◆ Unit testing, integration testing, system testing, validation testing, a brief introduction about debugging and various testing tools.

(Chapter 8)

Book of Study:

K K Aggarwal, Yogesh Singh Software Engineering (Third Edition) New Age International Publications

Reference:

Software Engineering VII th Edition Pearson Education

2 **A A** Pankaj Jalote

An Integrated approach to Software Engineering Narosa Publishing Company, Second Edition. Pearson Education

BCA603(A): Client Server Computing

Unit 1

Overview of C/S Computing: Definition, Benefits & Evolution, Hardware & Software, Trends, Evolution of operating systems, networking trends.

Overview of C/S applications: components, classes, categories.

Overview of C/S computing: Dispelling the Myths, Obstacles- Upfront and hidden, open systems and standards, Standards setting organizations, factors of success.

Unit 2

Client hardware and software: Client components and operating systems. What is GUI?,Xwindow vs. windowing, database access.

Application logic client software products: GUI environments, converting 3270/5250 screens, database access tools.

Client requirements: GUI design standards, Open GUI standards, Interface dependents, testing interfaces, development aides.

Unit 3

Server hardware: Benchmarks, categories of servers, features and classes of server machines.

Server Environment: eight layers of software s, network management and computing environments, extensions, network operating systems, loadable modules.

Server operating systems: OS/2, Windows new technology, UNIX based operating systems.

Unit 4

Server Requirements : Platform independence, transaction processing, connectivity, intelligent database, stored procedures, Triggers, Load Leveling, Optimizer, testing and diagnostics tools, real ability backup and recovery mechanisms.

Server data management and access tools: Data manager features, data management software, database gateways. LAN hardware and software, Network Operating Systems.

Text

1. Dawna Travis Dewire , Client Server Computing, McGraw Hill International

References

1. Tanenbaum and Van Steen, Distributed Systems Principles and Paradigams,

Image: Constraint of the section of

Education, 2005

2. **Orfali**, Harkey and Edwards, The Essential Client server Survival guide, 2nd edition

Galgotia, 2003
Jeffrey.D.Schan, C/S Application and Architecture, Novell Press, BPB

4. 4. Joe Salami, Guide to C/S Databases, Bpb Publn., 1994

5. A David Vaskevitch , Client Server Strategies, Galgotia, 1994.

BCA603(B): Linux Operating System

Unit 1:

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell - Linux File system - Boot block, Super block, Inode table, Data blocks, Linux standard directories. Commands for files and directories � cd, ls, cp, rm, mkdir, rmdir, pwd, file, more, less, Creating and viewing files using cat, file comparisons, View files, disk related commands, checking disk free spaces.

Unit 2:

Essential Linux commands, Understanding shells, Processes in Linux, process fundamentals, connecting processes with pipes, redirecting input/output, Background processing, managing multiple processes, scheduling of processes. Batch commands, kill, ps, who, Printing commands, find, sort, touch, file, file processing commands - wc, cut, paste etc - mathematical commands - expr, factor etc. Creating and editing files with vit editor

Unit 3:

System administration - Common administrative tasks, identifying administrative files \diamondsuit configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disabling of user \diamondsuit s accounts, creating and mounting file system, checking and monitoring system performance - file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel, installing and removing packages with rpm command

٢

Unit 4:

Shell programming - Basics of shell programming, various types of shell available in Linux, comparisons between various shells, shell programming in bash

Conditional and looping statements, case statement, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automating system tasks

Unit 5:
Simple filter commands ♦ pr, head, tail, cut, sort, uniq, tr - Filter using regular expression ♦ grep, egrep, sed ♦ Understanding various Servers ♦ DHCP, DNS, Squid, Apache, Telnet, FTP, Samba.

Book of study :

- 1. ��Red Hat Linux Bible� by Cristopher Negus, Wiley Dreamtech India
- 2. **•** UNIX Shell Programming **•** by Yeswant Kanethkar, BPB

References �:

1. Official Red Hat Linux User s guide by Redhat, Wiley Dreamtech India

Education

3. Beginning Linux Programming by Neil Mathew & Richard Stones, Wiley Dreamtech India

BCA 604 Seminar

WWWWWWW The student shall choose a modern topic of current day interest in the areas of Computer Science / Information Technology and present a seminar using appropriate presentation media such as LCD projector, OHP etc. A seminar report in bound form in the pattern of a complete technical report (with contents page, well structured presentation, references etc.) shall be submitted.

BCA 605: SOFTWARE DEVELOPMENT LAB II (Main Project)

The project topic shall be chosen from areas of current day interest using latest packages/ languages running on appropriate platforms, so that the student can be trained to meet the requirements of the Industry. A project report shall be submitted in hard bound complete in all aspects. For internal evaluation, the progress of the student shall be systematically assessed through various stages of evaluation at periodic intervals

LIST OF OPEN COURSES

OFFERING FACULTY	COURSE OFFERED
ENGLISH	ENGLISH FOR CAREERS
HINDI	FILM STUDIES
MALAYALAM	ɸߨíÅßÄßÏᢠØÞÙßÄcÕá¢
SANSKRIT	Kudiyattam – A Study
ARABIC	A PACKAGE IN GULF ARABIC
HISTORY	ENVIRONMENTAL HISTORY IN INDIAN CONTEXT
POLITICS	HUMAN RIGHTS IN INDIA (PS5DO7UG)
ECONOMICS	OUTLINE OF ECONOMIC THROUGHT (EC6B14.1U)
SOCIOLOGY	MEDIA AND SOCIETY
ISLAMIC HISTORY	ISLAMIC ECONOMICS AND BANKING
PHILOSOPHY	YOGA AND PERSONALITY DEVELOPMENT
BFT & APPAREL DESIGN	INDIAN EMBELLISHMENT TECHNIQUES
B C A	INTERNET, WEBDESIGNING & CYBER LAWS
B.Sc. COMPUTER SCIENCE	INTERNET, WEBDESIGNING & CYBER LAWS
B SW	Project Planning Management
BBM	Modern Banking Practices
BBA	Investment & Port Folio Management

Note : Students should not select Open Course of their own programme. Eg. Students belonging to English – Language and Literature should select any courses <u>other than the one</u> offered by the English Department – ie., <u>ENGLISH FOR CAREERS.</u>

The Chairperson, BoS, Hindi has recommended some omissions in the Prescribed Text for Common courses as detailed below :

1. <u>COMMON COURSES</u>

A) BA Hindi Language and Literature

Semester	Course		
I	Common Course- 1: Prose and One act Play		
	Prescribed Text Book :GADYA GAGAN (M	G University Publication)	
П	Common Course- 2 : Translation, Communication Skills And Applied		
	Grammar		
	Prescribed Text :SAMVAAD THADA SANRA	CHANA (M G University Publication)	
	Omission : Bhoomika Page 70-75		
	Passages 4& 5 from Solved passages page	78-90 (English to Hindi)	
	Passages 4,5,6,7,8,9,10 From Unsolved Passages (Hindi to English)		
	Page 81-83		
	Samuchaya Bodhak Page 169-176		
	SahayakKriyaem Page 127-135		
	Common Course – 3 : Poetry and Fiction		
	Dressriked Tout - AUTUVA MANUUCUA (MAC University Dublication)		
	Prescribed Text: AHITHYA MANJUSHA (IN G UNIVERSITY Publication)		
	Lessons to be studied from PART I :Poetry		
	Kabeer : First 4 Doha		
	Tulasi : First 4 Doha		
	MeeraBaiFirst Pada		
	Nirala :SarojSmriti		
	Ajney :Naach		
	VijayaDev Narayan Sahi :KhamoshDhadkanem		
	Anamika :Sthriyaam		
	BadriNarayan :PremPatru		
	Lossons to be studied from DAPT II - Stories		
	Premchand 'Aansuvoom Ki Holi		
	MannuBhandaari :RaaniMaamKachaboothara		
	Udayaprakaash :Aparaadhi		
	Novel : AKELI AWAAZ – RajendraAwas	ti (RajPal and Sons .New Delhi Publication)	
IV	Common Course – 4 : SAANSKRITI	K VIRAASAT (MG University Publication)	
	Lessons to be studied		
	1. Sanskrithik ki Kahani	Bhagvath Sharan Upadhyaya	
	2. Bharatiya Sanskrithi	Dr. Rajendra Prasad	
	3. Lokthantha Ek Dharm hai	Dr. Radakrishnan	
	4. Mahaanom ka Manwandar	Mukthibodh	

5. Sabhyatha ka Rahasya	Premchand
6. Sanskrithi aur Apasanskrithi	Kishan Patnatik
7.Ham Sanskrithi me Nahi Vikriti me vikasith ho rahe hei	Sundarlal Bahuguna
8.Athangavad aur hum	Ram Saranan Joshi
9.Keral: IthihaskeJharoke se	Dr. K.K. N Kurup
10.Samajik Kranthi ke Agradooth Sree Narayana Guru	Dr. Iqbal Ahammad
11.Dalith Anthonlan aur Ayyankali	Dr. R. Sasidhran

B) <u>B.Com – HINDI – COMMON COURSES</u>

Semester	Course
I	
	Common Course 1 : Prose & Applied Hindi
	Prescribed Text
	SahityaDarpan(Mg university publication)
	RachanaKaSach(Mg university publication)
	Prose Section from SahityaDarpan
	VyavasayikPatravyavahaar and Technical terminology from RachanaKasach
II	Common Course 2 : Poetry, Communicative Hindi & Translation
	Poetry section from Sahityadarpan
	From RachanaKaSach
	Part II – Samvaad ,ShabdhSangrah
	Part III – Translation
	Omission :
	Pages 123-131
	Solved Passage 3 Page 137
	Unsolved passage 5 Page 140
	Solved Passage 1 Page 141
	Unsolved Passage 1 Page 142

Students under Private Registration / SDE stream need to study the above portions only for Common Course – Hindi.