Vinoba Bhave University, Hazaribag

UNIVERSITY DEPARTMENT OF COMPUTER APPLICATIONS
VINOBA BHAVE UNIVERSITY, HAZARIBAG

COURSE STRUCTURE
CHOICE BASED CREDIT SYSTEM

The proposed CBCS system has the potential of providing a choice of a wide spectrum of subjects/branches of subjects to students in pursuit of achieving their cherished goals. This system has been globally accepted and now has become the need of the day. The UGC also has provided guidelines to the Universities for consideration and implementation of CBCS.

The University Department of Computer Applications proposes the following courses and credits to be initiated at BCA w.e.f. the session 2018 – 21. The proposed system may be modified/improved in future according to the requirements.

CORE Papers for BCA

Semester – I

Paper Code	Title	Credit	Marks
BCA F1001	Business Communications	4	100
BCA F1002	Basic Mathematics-I	5	100
BCA F1003	Business Practices And Management	4	100
BCA C1004	Introduction to Computer Science	4	100
BCA C1005	Problem Solving and Programming in C	5	100
Sessional			
BCA P1006	Computer Basics and PC Software Lab	1	50
BCA P1007	C Programming Lab	1	50
BCA P1008	Communication Skill Lab	1	50

Semester – II

Paper Code	Title	Credit	Marks
BCA F2001	Basic Mathematics II	4	100
BCA F2002	Environmental Science	4	100
BCA C2003	Database Management System	5	100
BCA C2004	Object Oriented Programming using C++	5	100
BCA C2005	Logic Design	4	100
Sessional			
BCA P2006	C ++ Programming Lab	1	50
BCA P2007	Database Management System Lab	1	50
BCA P2008	Circuit Design Lab	1	50

Semester – III

Paper Code	Title	Credit	Marks
BCA C3001	Data Structure using C	5	100
BCA C3002	Java Programming	4	100
BCA C3003	Computer Architecture	5	100
BCA C3004	System Analysis and Design	4	100
BCA C3005	Probability and Statistics	4	100
Sessional			
BCA P3006	Data Structure Lab	1	50
BCA P3007	Java Programming Lab	1	50
BCA P3008	Statistical Lab	1	50

Semester – IV

Paper Code	Title	Credit	Marks
BCA C4001	Multimedia	4	100
BCA C4002	Operating System	5	100
BCA C4003	HTML	4	100
BCA C4004	Visual Programming	4	100
BCA C4005	Computer Networks	5	100
Sessional			
BCA P4006	Multimedia Lab	1	50
BCA P4007	Visual Programming Lab	1	50
BCA P4008	HTML Lab	1	50

Semester – V

Paper Code	Title	Credit	Marks
BCA C5001	Internet Concept and Web Design	4	100
BCA C5002	Design and Analysis of Algorithms	5	100
BCA C5003	Linux Programming	5	100
BCA C5004	Computer Oriented Numerical Methods	4	100
	Elective – I	4	100
Sessional			
BCA P5005	Internet Concept and Web Design Lab	1	50
BCA P5006	Numerical Method Lab	1	50
BCA P5007	Linux Programming Lab	1	50

Semester – VI

Paper Code	Title	Credit	Marks
BCA C6001	Optimization Techniques	4	100
BCA C6002	Principle of Management	4	100
BCA C6003	Accounting and Financial Management	5	100
BCA C6004	Network Security	5	100
	Elective – II	4	100
Sessional			
BCA C6005	Project	2	100
BCA C6006	TALLY Lab	1	50

INTERNET CONCEPTS AND WEB DESIGN (BCA C5001)

TIME-3 hr **FULL MARKS-70** **CREDIT-4**

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: INTERNET BASICS

Basic concepts, Communication on the Internet, Internet Domains, Internet Server Identities, Establishing Connectivity on the Internet, Client IP Address, A Brief Overview of TCP/IP and its Services, Transmission Control Protocol, Web Server , Web Client, Domain Registration. **[Q-2]**

UNIT 2: JAVA SCRIPT

Java Script in Web Pages, Advantages of Java Script, Advantages of Java Script, Data Types and Literals, Type Casting , Java Script Array, Operators and Expression, Conditional Checking , Function, User Defined Function. **[Q-2]**

UNIT 3: UNDERSTANDING XML

SGML, XML, XML and HTML, Modeling XML Data, Styling XML with XSL, XHTML. **[Q-2]**

UNIT 4: CREATION OF DYNAMIC WEB PAGES USING JSP

Dynamic Web Page, Introduction of JSP, Pages Overview, JSP Scripting, Standard Action, Page Directive, Include Directive. **[Q-1]**

UNIT 5: PHP

PHP installation and Introduction, Loops, String Functions in PHP, PHP Email Function, PHP Basics, Variables, Arrays in PHP with Attributes, Date & Time, Image Uploading. **[Q-1]**

TEXT BOOKS:

1. Ivan Bay Ross- Web Enable Commercial Application Using HTML, DHTML,
BPB Publication

REFERENCE BOOK & WEBSITE:

1. Java Server Side Programming -WROX Publication
2. Michel Morrison -HTML and XML for Beginners, PHI, New Delhi- 2001
3. H.M Dietal and P.J Dietal -Java How to Program, PHI, New Delhi- 2005
4. www.spoken-tutorial.org, spoken tutorial IIT Bombay

DESIGN AND ANALYSIS OF ALGORITHM (BCA C5002)

TIME-3 hr **FULL MARKS-70** **CREDIT-5**

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: INTRODUCTION & DESIGN OF EFFICIENT ALGORITHM
Algorithm, Complexity, Asymptotic Notations, Solving recurrences. **[Q-1]**

UNIT 2: DIVIDE AND CONQUER
Binary Search, Finding Maximum and Minimum, Merge Sort, Quick Sort. **[Q-2]**

UNIT 3: THE GREEDY METHOD:
The General Method, Minimum Cost Spanning Trees: Kruskal & Prism's Algorithm. **[Q-2]**

UNIT 4: DATA STRUCTURE FOR SET MANIPULATION PROBLEMS
Fundamental Operations on Set, Hashing Technique, Binary Search Trees. **[Q-2]**

UNIT 5: ALGORITHM ON GRAPHS
Depth First Search, BFS, Depth First Search of a Directed Graph. **[Q-1]**

Text Book:

1. Horowitz E- Computer Algorithms, Galgotia Publication, New Delhi -2000

Reference Book:

1. Aho A.V, Hopcroft J.E & Ullman J.D - The Design and Analysis of Computer Algorithm, Addison Wesley, 1998.

LINUX PROGRAMMING (BCA C5003)

TIME-3 hr **FULL MARKS-70** **CREDIT-5**

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: Overview Of Linux Architecture:

Kernel, Processes, Time Sharing, Shell, Files And Directories, Creation Of A File, Inode Numbers And Filenames, File Security, File Systems, Peripheral Devices As Files. **[Q-2]**

UNIT 2: Linux Editor and Basic LINUX Commands:

Ed Editor, Vi Editor, Redirections, Piping, Filters, LINUX Utilities, Grep, Sed, Awk etc. **[Q-1]**

UNIT 3: Introduction to Shell Scripts:-

Bourne Shell C Shell, Shell Variables, Scripts, Metacharacters And Environments, If and case Statements. For, While and until Loops. **[Q-2]**

UNIT 4: Awk Programming:-

Awk Pattern, Scanning And processing Language, Begin and End Patterns. Awk Arithmetic and variables. Awk Built in Variable names and Operators. Arrays and Strings. **[Q-1]**

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UNIT 5: Introduction To System Administration:-

File System ,System Administrator and its Role, Function of a system Manager, practical Aspect of System Administrator, Visual Attributes.System Call and C function Library:- linux System Call library function and Math Library, standard I/O package. File Hindling, Command Lie parameters, Linux –C interface, C files. **[Q-2]**

TEXT BOOK:

1. A. Robbins- Linux Programming by Example- Pearson Education, New Delhi- 2005

REFERENCE BOOKS:

1. J.Goerzen- Linux Programming Bible, IDG Books, New Delhi- 2001
2. N.Mathew & R.Stones- Beginning Linux Programming Wiley Publishing India, 2004

COMPUTER ORIENTED NUMERICAL METHODS (BCA C5004)

TIME-3 hr **FULL MARKS-70** **CREDIT-4**

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: ERRORS IN NUMERICAL CALCULATIONS

Numbers and their accuracy, Errors and their Computations- Absolute, Relative and Percentage, General Error Formula. **[Q-2]**

UNIT 2: SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS

Introduction, Bisection method, Iteration method, Method of False Position, Newton- Raphson method.
[Q-1]

UNIT 3: INTERPOLATION

Introduction, Errors in Polynomial Interpolation, Finite Differences-Forward, Backward and Central, Detection of errors using Difference tables, Differences of a Polynomial, Newton's formulae for Interpolation, Central Difference Interpolation Formulae- Gauss's Central Difference Formula, Interpolation with unevenly spaced points, Lagrange's Interpolation Formula, Divided Differences and their properties- Newton's General Interpolation Formula. **[Q-2]**

UNIT 4: NUMERICAL DIFFERENTIATION AND INTEGRATION

Introduction, Numerical Differentiation and Errors, Numerical Integration – Trapezoidal Rule, Simpson's 1/3 Rule, Simpson's 3/8 Rule. **[Q-2]**

UNIT 5: NUMERICAL SOLUTION OF LINEAR SYSTEM OF EQUATIONS

Direct Methods- Matrix Inversion Method, Gauss-Jordan Method, Gauss Elimination Method, Iterative Method- Gauss- Jacobi Method, Gauss-Seidel Method.

Taylor's Series, Euler's method, Modified Euler's method, Runge-Kutta method of 2nd and 4th order.
[Q-1]

TEXT BOOK:

1. S.S.Sastry -Introductory methods of Numerical Analysis,4th Edition,Prentice Hall of India, New Delhi, 2006

REFERENCE BOOKS:

1. V.N.Vedamurthy et.al.-Numerical Methods, Vikas Publishing House, New Delhi, 2005.
2. B.S.Grewal- Numerical Methods in Engineering & Science, Khanna Publishers,Delhi,2005.

INTERNET CONCEPT AND WEB DESIGN LAB (BCA P5005)

TIME-3 hr **FULL MARKS-50** **CREDIT-1**

Experiment problems of Visual Programming Lab will be from the theory classes of BCA C5001

NUMERICAL METHOD LAB (BCA P5006)

TIME-3 hr **FULL MARKS-50** **CREDIT-1**

Experiment problems of Numerical Method Lab will be from the theory classes of BCA C5004

LINUX PROGRAMMING LAB (BCA P5007)

TIME-3 hr **FULL MARKS-50** **CREDIT-1**

Experiment problems of Linux programming lab will be from the theory classes of BCA C 5003

ELECTIVE - I

E-COMMERECE (BCA E5007)

TIME-3 hr **FULL MARKS-70** **CREDIT-4**

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

UNIT 1: INTRODUCTION TO E-COMMERCE

E-commerce, E-commerce business models, Major business-to-consumer (B2C) business models, Major business-to-business (B2B) business models, Business models in emerging E-commerce areas, How the internet and the Web change business. **[Q-2]**

UNIT 2: E-COMMERCE INFRASTRUCTURE

The Internet, Technology background, The world wide web.
A systematic approach, choosing server software, choosing the hardware for an E-commerce site, other E-commerce site tools. **[Q-2]**

UNIT 3: SECURITY AND ENCRYPTION

The E-commerce security environment, Security threats in the E-commerce environment, Technology solutions, Policies, Procedures and Laws. **[Q-2]**

UNIT 4: E-COMMERCE PAYMENT SYSTEMS

Payment systems, Credit card E-commerce transactions, E-commerce digital payment systems in the B2C arena, B2B payment systems. **[Q-1]**

UNIT 5: ETHICAL, SOCIAL, AND POLITICAL ISSUES IN E-COMMERCE

Understanding ethical, social, and political issues in E-commerce, Privacy and information rights, Intellectual property rights, Governance, Public safety and welfare. **[Q-1]**

TEXT BOOK:

K.C. Laudon & C.G. Traver, E-commerce, Pearson Education, 2003

REFERENCE BOOKS:

1. R. Kalakota & A.B.Whiilston-' Frontiers of Electronic Commerce, Pearson Education- 2006.
2. K.K.Bajaj & D.Nag- E-Commerce, Tata McGraw Hill, New Delhi, Second Edition.

ELECTIVE – I
SOFTWARE TESTING (BCA E5008)

TIME-3 hr **FULL MARKS-70** **CREDIT-4**

The question paper shall consists of two sections: A and B. **Section A** will have eight (08) questions, out of which four (04) questions will be answered and will carry 10 marks each. **Section B** will consists of 10 short answer type questions which will cover the entire syllabus and will carry 30 marks in all., each short-answer type questions carrying 3 marks.

Unit 1:
Introduction: Purpose – productivity and quality in software – testing vs debugging – model for testing – bugs – types of bugs – testing and design style.

Unit 2:
Flow/ Graphs and path testing – achievable paths – path instrumentation – application – transaction flow testing techniques – data flow testing strategies

Unit 3:
Domain testing: Domains and paths – domain and interface testing – linguistic – metrics – structural metrics – path products and path expressions.

Unit 4:
Syntax testing – formats – test cases – logic based testing – decision tables – transition testing – states, state graph, state testing.

Unit 5 :
Verification and validation – fundamental tools – levels of testing – testing approaches – types of testing – test plan – software testing tools: WinRunner – Silk test.

Text Book:

1. B. Beizei, 2003, Software testing techniques, IIEdn., DreamTech India, New Delhi
2. K.V.K.K. Prasad, 2005, Software testing tools, DreamTech India, New Delhi

Reference Book:

1. I. Burnstein,2003, Practical software testing, Springer International Edn.
2. E. Kit, 1995, Software testing in the real world: Improving the process, Pearson Education, Delhi
3. R. Rajani, and P. P. Oak, 2004, Software testing Tata Mc. Graw Hill, New Delhi