UNIVERSITY OF JAMMU

NOTIFICATION
(10/July/ ADP/28)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation to the approval of the Academic Council, has been pleased to authorize adoption of the revised Syllabi and Courses of Study in the subject of Computer Application for BCA Part I of Three Year (General) Degree Course for the examination to be held in the years as under alongwith %age of change:-

Adoption of the Revised Syllabi of BCA-I

Class	Part	For the Examinations to be held in the year	%age of Change
BCA	Part I	2011, 2012 & 2013	BCA-102 A- 100% BCA-102 B- 100%
			BCA-103 A- 100% BCA-103 B- 100%
			BCA-104 A- 100% BCA-104 B- 100%

The alternative question papers are required to be set as per the University regulation given as under:-

i). If the change in the Syllabi and Courses of Study is less than 25%, no alternative Question paper will be set.

ii). If the change is 25% and above but below 50% alternative Question Paper be set for one year.

iii). If the change is 50% and above on whole scheme is changed, alternative Question Paper are set for two years.

Sd/-
(DR. P.S. PATHANIA)
REGISTRAR

F.Acd./XXVI/10/ 4182-4226
Dated: 17-07-2010

BCA 101

Paper code BCA 101(A)	Title:	Gen English A
Paper code BCA 101(B)	Title:	Gen English B

BCA 102

Paper code BCA 102(A)	Title:	Mathematical Foundation of Computer Sciences
Paper code BCA 102(B)	Title:	System Analysis and Design

BCA 103

Paper code BCA 103(A)	Title:	Computer Fundamentals
Paper code BCA 103(B)	Title:	Programming in C Language

BCA 104

Paper code BCA 104(A)	Title:	Computer Network and Internet Technologies
Paper code BCA 104(B)	Title:	DOS, Windows and Ms-Office

Paper code BCA 102

There shall be two written papers of 75 marks and of three hours duration each. 20% of the marks shall be reserved for the internal assessment. Each paper will be set for 60 marks. In case of regular students Internal assessment received from the colleges will be added to the marks obtained by them in University Examination. In case of private candidates marks obtained by them in the university examination shall be increased proportionally in accordance with the statues per regulation.

Note for Paper Setting

The question paper will contain two questions from each unit carrying 12 marks each. (Total 10 questions) The candidates will be required to answer one question from each unit. Total question to be attempted will be 5 i.e, there will be an internal choice with in each unit.

Paper code BCA 103 &104

The proposed scheme includes the following

1) Two theory paper A & B, each carrying one examination of 40 marks and of three hours duration.

(Total 80 marks)

2) One practical examination of 25 marks to be conducted by one external and one internal examiner, to be held in one day with the duration of four hours.

3) Theory paper shall carry an internal assessment of 10 marks for each paper.

(Total 20 marks)

4) Practical shall carry an internal assessment of 25 marks. Internal assessment shall be awarded as per rules of University on the subject

(Total 20 marks)

Note for Paper Setting

The question paper will contain two questions from each unit carrying 8 marks each. (Total 10 questions) The candidates will be required to answer one question from each unit. Total question to be attempted will be 5 i.e, there will be an internal choice with in each unit.

Practical Exams 103

Students must implement atleast 5-10 problems from each unit of paper code 103 (B). Minimum 30 problems in total are to be implemented covering all the topics of C Language.

Practical Exams 104

Internal and External Practical exam of this course will be based on the BCA 104 (A) & BCA 104 (B). Minimum 30 assignments in total are to be done covering all the topics of both the papers.

Paper Code: BCA 102 (A)

Title: *Mathematical Foundation of Computer Science*

UNIT - I

Sets, Relations and Functions:

Definition of Sets and Subsets; Intersection Union and Complements: Demorgan's Law; Cardinality; Relations - Equivalence relation etc. Mapping One-one Onto etc.

20 Hrs.

UNIT - II

Calculus:

Functions; Limits and Continuity; Differentiation and Integration; Differential Equations of first Order and first degree.

20 Hrs.

UNIT - III

Linear equations and Matrices:

Various types of Matrices Row/Column operations, Solution of linear equations, Gaussian Eliminations etc., Properties of determinants; Cramer's Rule; transpose and inverse of a Matrix.

20 Hrs.

UNIT - IV

Probability: Random Experiment, Sample Space, Algebra of Events, Mathematical / classical probability, Addition theorem for mutually exclusive events, Conditional probability, independence events, Theory of total probability for compound events, Baye's theorem, Permutation and Combination and Progressions

20 Hrs.

UNIT - V

Vector Spaces:

Definition of Vector, Scalar Product, Vector Product Linear Independence; Bases, Subspace and dimensionality Inner products and Norms.

Vector Algebra:

Definition of Vector, types of Vectors, Addition of two vectors, multiplication by a scalar, laws of vector, addition collinear vectors, coplanar vectors, product of two vectors, laws of product of two vectors, scalar triple product, vector triple product.

20 Hrs.

SUGGESTED READINGS:

1. Modern Algebra by Prof. M.R. Puri and Dr. Rai Krishan, *Publisher: Malhotra Brothers*
2. Matrices by A.R. Vasishtha, *Publisher: Krishna Prakashan Mandir*
3. Trembley, J.P. and Manohar, R.P.: Discrete Mathematical Structures with Applications to Computer Science, *McGraw-Hill, 1975.*
4. Lew: Computer Science: A Mathematical Introduction, Prentice - *Hall International (Paperback Edition).*
5. Hans Scheinder and George P Barker: Matrices and Linear Algebra, *Holt Rinehart, 1968.*
6. Kenneth.H.Rosen: Discrete mathematics and its applications 3rd Edition, *McGraw Hill international edition.*
7. Elements of Vector Algebra by B.L. Raina, *Publisher: Malhotra Brothers*
8. Vector Algebra by R. Gupta, Publisher: *Laxami Publishers (P) Ltd.*
9. D.R Sharma, Brilliant Mathematics, *Sharma Publications*

Paper Code: BCA 102 (B)

Title: *System Analysis and Design*

UNIT - I

System: Definition, Feedback and Control, Business Organization as a system, Information System and its components.

Project Selection: Sources of project request, Problem definition, Preliminary Investigation, Data Gathering.

Feasibility Study: Technical, Operational and Economical, Steps in Feasibility analysis, Feasibility considerations, Feasibility Report.

Cost Benefit analysis: Cost and Benefit Categories, Procedure for Cost/ Benefit Determination.

20 Hrs

UNIT - II

System Development Life Cycle: Definition, Basic Tools in System analysis, System analysis and design, Implementation, Maintenance, Water Fall model, Cocomo Model, Prototype Model, Spiral Model and Incremental Model.

Metrics: Definition, Function based metrics, Metrics for specification quality, Metrics fo maintenance, Cohesion and Coupling

20 Hrs

UNIT - III

Hardware and Software Selection: Evaluation Process, Financial Consideration in Selection, rental option, lease option, purchase option, Vendor Selection,

System analyst: Attributes, Roles, User involvement, people, problem and process.

Software characteristics, Software components.

20 Hrs

UNIT - IV

Process Design: Logical and Physical Design, Design Methodologies, Structure design, form driven methodologies, File organization and data base design.

File Structure: File organization, Sequential Organization, Indexed Sequential Organization, Direct Access Organization

Input Design: Form, Form Design, Classification of forms, Requirements of form design.

Data Base Design: Objective of Database, Key terms, Logical and Physical views of data, role of DBA.

20 Hrs

UNIT - V

Quality Assurance: Goals in system life cycle, Levels of quality assurance, McCall's Quality Factors, Role of data processing auditor, audit trail.

Software testing: Why system testing, Nature of test Data, Test Plan, Verification and Validation, organizing for software testing, Unit testing and Integration testing

System Security: Definition, Threats to system security, Control Measures, Disaster/recovery planning.

20 Hrs

SUGGESTED READINGS:

1. Elias M. Awad, *System Analysis and Design*
2. Roger S. Pressman, *Software Engineering*
3. Whitten, Bentleyetal, *System Analysis and design Methods,*
4. V. Rajaraman, *Analysis and Design of Information Systems*
5. Pankaj Jalote, *An Integrated approach to software engineering*

Paper Code: BCA 103 (A)
Title: *Computer Fundamentals*

UNIT-I

Computer: Digital and Analog, History of computers, Generations of computers Bits, Bytes & Words, Von Newman architecture.

Input / Output Units: Keyboard, Mouse, Printers, CRT, LCD, Light pen, Scanner, Touchpad, Joystick, plotters, OCR, OMR, MICR, Touch panels.

Memory Organization: Processor memory, Primary & secondary memories, Optical memories such as CD, DVD, HDVD, DVD+R DL, Blue Ray Disk etc., Magnetic disk, Hard Disk, Pen Drives

Access Mode: Random Access Mode, Sequential Access, Direct Access, Access Time

CPU Organization: Brief description of CPU, Block Diagram of CPU

20 Hrs.

UNIT-II

Number System: Decimal Number system, Binary Number system, Octal Number system, Hexadecimal Number System , 1's and 2's Compliment , Conversion of a number from one system to another, Fixed point and Floating point representation of numbers and arithmetic operations on these numbers, Shortcut methods of conversion from one system to another.

Operation on Binary numbers: Addition, Subtraction, Division and Multiplication.

Computer Codes: BCD Code, EBCDIC code, ASCII, Collating Sequence.

20 Hrs.

UNIT-III

Computer software: Definition, System software, Application software and Utilities programs, Uses of computer software in education, agriculture, communication, weather forecasting, business and other areas, Software development steps, Firmware, Freeware.

Multimedia: Definition, Multimedia computer system, Multimedia components (Text, Graphics, Animation, Audio, video), Multimedia Application, 3D Graphics Program, Animation, Shading, Anti aliasing, Morphing, MIDI etc.

20 Hrs.

UNIT-IV

Algorithm: Definition, Features of algorithms, Performance of algorithm (best case, worst case and average case) Limitations of algorithms, 5-10 problems of writing algorithms.

Flowcharts: Definition, Features of flowcharts, Limitations of flowcharts, 5-10 problems of drawing flowcharts.

Programming Languages: Machine language, Advantages and Limitations of Machine languages, Assembly language, Advantages and Limitations of Assembly languages, High level languages, Compilers, linkers, interpreters, Advantages and Limitations of High Level Languages.

20 Hrs.

Unit-V

Operating System: Evolution of OS, Types of OS, Popular OS (UNIX, Microsoft XP, LINUX)

OS structure: monolithic, layered, virtual and client server model.

Function of OS: Process Management, Multiprogramming, Multitasking, Multiprocessing, Time-Sharing.

Basic Concepts of Memory Management: Uni programming Memory Model, Multiprogramming memory Model, Virtual Memory.

Basic Concepts of File Management: File Access Methods, File Operation, File Naming.

20 Hrs.

Suggested Readings

1. P.K Sinha & Priti Sinha, *Computer Fundamentals*, BPB Publications.
2. Alexix Leon, Mathewes Leon, *Fundamentals of Information Technology,*
3. Turban, *Introduction to IT,* Wiley India.
4. Suresh K. Basandra, *Computer Systems Today,* Wheeler Publishing.
5. V. Rajaraman, Fundamentals of Computers, EEE.
6. Peter Norton, *Introduction to Computers*, McGraw Hills.

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Paper Code: **BCA 103 (B)**
Title: ***Programming in C Language***

UNIT-I

History of C language, Structure of C program, compiling, and running a C program, Errors: syntax, linker and logical errors.

Character set of C language, identifiers, keywords, data types, variables, constants, expressions. Operators: Mathematical, Unary, Binary, Relational and Logical operators, Operator precedence and associativity.

20 Hrs

UNIT-II

Conditional Control statements: if statement, if else statement, nested if statement, if else if ladder and Ternary operator, Switch case statement, GOTO statement.

Looping control Statements: While loop, Do while Loop, For loop, Nested loops, break statement.

20 Hrs

UNIT-III

Functions: Definition, Types of Function, Scope, Call by Value.

Pointers: Declaration, Definition, Indirection, Arithmetic, Call by Reference.

Storage classes in C, Preprocessors, Macros.

Single dimensional arrays: Definition, Declaration, Accessing, Bound Checking, Passing to function.

Double dimensional arrays: Definition, Declaration, Accessing, Passing to function.

20 Hrs

UNIT-IV

Strings : Definition, Declaration, Accessing, Passing to function, Standard Library Functions of string.h

Arrays and Pointers: Accessing single dimensional array using Pointers, Accessing 2D array using Pointers, Passing arrays to functions with pointers.

Pointer and Strings: Accessing strings by pointers, passing strings to functions with pointers.

20 Hrs

UNIT-V

Structures & Unions: Declaring, Initializing and Accessing structures, Passing structures to functions, Array of Structures, Nested Structures, Unions initialization and accessing the members of a union.

Files: File opening modes, Opening and closing a data file, Reading, Writing and Appending data files.

20 Hrs

Suggested Readings

1. Shubhnandan S. Jamwal, *Executing C,* Saksham International
2. Gottfried. B, *Theory and problems of Programming with C Language, Tata Mc Graw Hill.*
3. Kenneth. A, *C Problem Solving and Programming,* PHI.
4. Dan Gookin, *C Programming,* Wiley Dreamtech.
5. Y. P. Kanetkar, *Understanding Pointers In C*, BPB Publications.
6. HM Deitel and P.J Deitel, C How to Program, PHI.

Paper Code: BCA-104 (A)
Title: *Computer Networks & Internet Technologies*

UNIT-I
Computer networks: Introduction, Advantages of Networks, structure of communication networks, Point to Point and Multidrop Circuits, Data flow and Physical Circuits, Network Topologies, Topologies and design goals, Hierarchical Topology, Horizontal Topology, Star Topology, Ring Topology, Mesh Topology, Channel Speed, bit rate, Baud, Band Width and frequency spectrum, Analog and Digital Signals, Modem, Asynchronous and Synchronous communication.

20 Hrs.

UNIT- II
Connection oriented and connection less Networks, Classification of communication protocols, Polling and selection systems, Selective and Group Polling, stop and wait Polling,
Multiplexing: Definition, TDM, FDM, Phase Multiplexing,   Carrier Sense System.
Digital System: Advantages of Digital System, Signal Conversion, Analog to Digital techniques, Reference Models, OSI Reference Models and TCP/IP Reference Models   *20 Hrs.*

UNIT-III

Internet: Definition, Internet & Intranet, Protocols, WWW, Services, Resource Sharing, FTP, Telnet, Newsgroups, Search Engines, Proxy servers.
Email: Introduction, Email messages, Sending and Receiving attachments, Mailing Lists, Smileys, Advantages and Disadvantages, MIME.
Web browsers: Definition, Types, Features, Customizing IE, Browser Portability,
Elements of Internet Explorer Window: Standard Button Toolbar, Address Bar, Link Bar, Explorer Bar, viewing window, status bar, Context Menus, Managing the favourite menus.

20 Hrs.

UNIT –IV
HTML: Introduction, Basic Concepts, Overview, Structure of HTML Document, Creating Hyperlinks, Line, Line Break, Font, Paragraphs etc.
Lists: Ordered List, Unordered list, Nested Lists.
Images: Inserting Image, Changing Height & width, Hyperlink the Image.
Tables: Table Tags, Cell spacing , Cell padding, Row grouping, Header, Footer etc.
Frames: Creating framesets, margin, borders and scroll bars, nested frame sets, Targeting links to frame etc.
Forms: Form tags, Radio, check boxes, Input Boxes, Password Input box, reset and submit button etc.

20 Hrs.

UNIT –V
DHTML: HTMLVs DHTML, Basic Concepts of Style sheets, CSS, Using CSS in HTML Documents, Linking and Embedding of CSS in HTML Documents, Proprieties of CSS, Inline Style sheets, Dynamic Style sheets, Dynamic Positioning and Layer Object.
Events : Event on click, Event on Load, Error Handling with on-Error, Tracking the Mouse with on Mousemove, Rollovers with on Mouseover and on Mouseout, Form Processing with onfocus and Onblur, Event Bubbling.
Filters and Transition: Flip Filters, Creatinf image masks, Adding Shadows to Text, Making Text Glow, Creating motion with Blur, Using the wave filter, Drop shadow and Light.

20 Hrs.

Suggested Readings:
1. H.M Dietel, P.J Dietel, A.B. Goldberg, *Internet and world wide web,* Pearson Prentice Hall
2. HTML 4.0, Lee Annie Philips, Prentice Hall India.
3. Jon Ducett, *Beginning Web Programming with HTML, CSS and Java Script*, Wiley India.
4. Doulas and E. Comer: The Internet, PHI
5. Uyless Black, Computer Networks, PHI
6. Andrew S. Tanenbaum, Computer Networks, Pearson Prentice Hall.