

Syllabus for BCA 1st year (Semester-II)

Effective from Academic Session-2015

| Subject Code | Subject Name | Theory | | | | Practical | | | |
|--------------|--|----------|-----|----------------------|-----|-----------|-----|----------|-----|
| | | External | | *Internal Assessment | | External | | Internal | |
| BCA | Bachelors of Computer Application | Max | Min | Max | Min | Max | Min | Max | Min |
| BCAS201 | Discrete Mathematics | 80 | 29 | 20 | 08 | --- | --- | --- | --- |
| BCAS202 | Digital Electronics | 80 | 29 | 20 | 08 | --- | --- | --- | --- |
| BCAS203 | Advanced Programming Using C | 80 | 29 | 20 | 08 | --- | --- | --- | --- |
| BCAS204 | Management Information System (MIS) | 80 | 29 | 20 | 08 | --- | --- | --- | --- |
| BCAS205 | Lab-I Digital Electronics (Based on BCAS202) | --- | --- | --- | --- | 25 | 09 | 25 | 09 |
| BCAS206 | Lab-II- Advanced Programming Using C (Based on BCAS203) | --- | --- | --- | --- | 25 | 09 | 25 | 09 |

| *Internal Assessment | Theory paper carrying 100 marks |
|--|---|
| Attendance | 10 marks 03 mark (upto 75.99%) 05 marks (76-84.5%) 07 marks (84.6-90.5%) 10 marks (90.6 and above %) |
| Internal/Continuous Assessment/Class Test | 10 marks |
| | Total:- 10+10=20 |

Course Title: Discrete Mathematics

Unit-I: Set theory, Relations and Functions.

Sets, Set operations, Venn diagram, Algebra of sets and duality, counting principle of sets, inclusion exclusion principle, Power Sets, multisets.

Relations, pictorial representation of relations, Cartesian product, composition of relations, types of Relations, closure properties, equivalence Class, Ordering Relations.

Functions, types of functions, mathematical exponential and logarithmic functions and operations on functions

Unit-II: Mathematical logic and counting.

Propositions, logical operations, truth table of propositions, tautologies and contradictions, logical equivalence, algebra of propositions, conditional propositions, arguments quantifiers and negation of quantifiers.

Predicate logic, methods of proof and mathematical induction

The fundamental principles of counting, factorial notation, permutation and combination, pigeon hole principle, inclusion exclusion principle, and binomial theorem.

Unit-III: Graph theory and trees.

Graphs, degree, regularity and isomorphism, sub graphs, operations on graphs connected graphs, components, bipartite graphs, planar graphs, Eulerian graphs, Hamiltonian graphs.

Trees and their properties, binary trees, complete and extended binary trees, level of a tree, height/depth of a binary tree, tree traversal techniques, spanning trees.

Unit –IV Boolean Algebra and Algebra of Logic , Posets, Lattices, Boolean Algebra, Finite

Boolean Algebra as Tuples or $0\phi s$ and Boolean Expressions, Applications of Boolean Algebra.

Propositions and Logic operations, Truth Tables and Propositions Generated By Set, Equivalence and Implication, Laws of Logic, Mathematical System, Mathematical Induction Quantifiers

Reference Books:

1. Discrete Mathematics by Lipschutz Tata Mc graw Hill Publications.
2. Discrete Mathematics with Applications By Rosen Tata Mcgraw Hill.
3. Discrete Mathematics by Swapan K Sarkar S Chand Publications
4. Discrete Mathematics by C L liu Tata Mc graw Hill Publications

Course Title: Digital Electronics

Unit – I: Binary Systems, Boolean Algebra & Logic Gates

Binary Numbers and Number Base Conversion, Binary Codes, Binary Storage, Binary Registers, Binary Logic and Integrated Circuits, Axiomatic Definition of Boolean Algebra, Basic Theorems and Properties, Boolean Functions, Canonical and Standard Forms, Other operations, Digital Logical Gates and IC Digital Logical Families.

Unit –II: Simplification of Boolean Functions.

The Map Method Up to 4 Variables, Product of sums, Sum of Products Simplification, NAND and NOR Implementation, Don't Care Conditions, Tabulation Method, Determination of Prime-Implicates, Selection of Prime-Implicates.

Combinational Logic With MSI and LSI

Adders, Subtractors, Code Conversion, Digital Comparator, Parity Checker/Generator, Encoders, Priority Encoders, Decoders, Multiplexer, Multilevel NAND and NOR Circuits EX-OR and Equivalence Function Combinational Logic.

Unit – III: Sequential Logic

Different types of Flip-Flops and Other Triggering and Clocking, Serial Parallel Data Transfer Shift Registers, Mod-N Counters, Ripple Counter, Clocked, Synchronous Counters, Ring Counter, Application of Counters.

Unit –IV: Basics Of Semi Conductor Electronics

Semi-Conductor Devices and its types, Diode, Transistors and its various types, PN junctions, IC Terminology, IO Conditions, Fan-In Fans-Out, Propagation Delay, Noise Immunity, Circuit Characteristics of TTL, ECL, MOS (PMOS, NMOS) , CMOS, MOSFET ROM, Two Dimensional Addressing of ROM.

Reference Books:

1. Ronald J Toci, Digital System: Principle and Applications.
2. Morris Mano, Digital Logic and Computer Design. Pearson Education
3. Thomas L Floyd, Digital Fundamentals. Pearson Education

Course Title: Advanced Programming Using C

Unit-1

Function: Declaration of a Function, Function Prototypes, The Return Statement, Types of Variables and Storage Classes, Automatic Variables, External Variables, Static Variables, Register Variables, Types of Function Invoking, Call by Value, Recursion
Structures and Unions Declaration of Structures, Accessing the Members of a Structure, Initializing Structures,
Structures as Function Arguments, Structures and Arrays, Unions, Initializing an Union, Accessing the Members of an Union,

Unit- II

Pointers: Pointers and their Characteristics, Address and Indirection Operators, Pointer Type Declaration and
Assignment, Pointer Arithmetic, Passing Pointers to Functions, A Function Returning More than One Value, Function Returning a Pointer, Arrays and Pointers, Array of Pointers, Pointers and Strings
File Handling in C Using File Pointers, Open a file using the function fopen (), Close a file using the function fclose (), Input and Output using file pointers, Character Input and Output in Files, String Input / Output Functions, Formatted Input / Output Functions, Block Input / Output Functions, Sequential Vs Random Access Files, Positioning the File Pointer.

Unit-III

Preprocessors # define to Implement Constants, # define to Create Functional Macros, Reading from Other Files using # include ,Conditional Selection of Code using #ifdef, Using #ifdef for different computer types. Other Preprocessor Commands, Predefined Names Defined by Preprocessor, Macros Vs Functions. Dynamic Memory allocation and deallocation using heap

Unit -IV

Graphics: Introduction to graphics, graphic initialization, graphic modes. Elementary graphics application using Turbo-C library

Reference Books:-

1. Let us C By Yeshvant Kannelkar BPB Publications.
2. Programming in ANSI C By E Balaguruswamy Tata Mcgraw Hill
3. Programming With C By Byron Gotterfried Tata Mcgraw Hill

Course Code: BCAS204

Course Title: Management Information System (MIS)

UNIT- I:

Managing the digital firm: Why information system? Perspectives on information system; Contemporary approach to Information system; learning to use information systems: New opportunities with technology Information System in the Enterprise Major types of system in organization; Systems from functional perspectives; Integrating functions and business processes: Introduction to Enterprise application

UNIT-II:

Introduction to the concept of Decision Support System: Components of DSS: Dialogue Management; Data Management and Model Management for DSS; Example of different types of DSS; System Analysis and Design for DSS; Model in the Context of DSS.

Unit-III:

Algorithm and Heuristics; DSS application in different Functions; Design for interfaces in DSS; An overview of DSS Generators; Group Discussion in Support System, Decision Conferencing .

Introduction of Expert Systems; Expert system in Management; Case study of Expert System; Introduction to GIS; MIS based on GIS; Case studies; Executive information System (EIS);

Unit- IV:

Data Processing: Concepts, relevance and cycle; organisation and attributes of Business data processing; computing Environments; programming methodologies: structured, object oriented, etc; Business Systems; Business Computing: characteristics, significance and distinguishing features.

Reference Books:-

1. S. Sadagopan Management Information Systems - PHI Learning Pvt. Ltd.
2. Raymond Mcleod Management Information Systems ó Pearson Education
3. Lawrence Orilia- Introduction to Business data processing- McGraw-Hill Companies
4. Mike Murach - Business Data processing- Sra.

Scheme/Instructions for teachers/paper setters

1. *Semester end examination question paper will consist of two sections viz; A and B. Section A will contain 4 questions, one question with an alternate from each unit. Section B will consist of 4 questions also, on each unit and the examinees will be required to attempt only two questions. In all, each student will be required to attempt 6 questions- 4 medium type and 2 long answer type questions.*
2. *Division of marks between section A and Section B will be in the ratio of 60:40. For non-lab courses weightage of Section A will be 48 marks, while as it will be 36 marks in case of lab courses. In case of section B, the weightage will be 32 and 24 marks for non-lab and lab courses respectively.*
3. *While Internal Assessment Test will be conducted by the concerned college, semester end examination will be held by the University of Kashmir;*
4. *The question paper shall be of 2:30 hours duration.*