HIMACHAL PRADESH UNIVERSITY

BACHELOR OF COMPUTER APPLICATIONS (BCA)
As per the amendments on 14.8.15 by the Executive Council of H.P. University, Shimla and effective from session 2015-16 onwards
Duration: 3 Years (6 Semesters)

1. About the Course
   Bachelor of Computer Applications (BCA) is three years under graduate course spread over six semesters under self financing scheme.

2. Eligibility
   Candidates who have passed 10+2 examination from H.P. Board/CBSE/ICSE or any other examination considered equivalent to 10+2, by the Himachal Pradesh University, Shimla05, with 40% Marks (35% marks for SC/ST category), shall be eligible.
   Maximum age limit for admission to BCA course is 21 years for general category, 24 years for SC/ST category and 23 years for girls candidates, as on the 1st July of the year concerned. The Vice Chancellor may permit age relaxation up to maximum of three months.

3. Mode of Selection
   The admission to BCA course will be made on the basis of merit of the qualifying examination.
   As per H.P. University rules 75% seats will be filled out of the candidates who have passed their 10+2 examination from the school situated in Himachal Pradesh irrespective of the Board. Remaining 25% seats will be filled on all India basis. Other reservation rules of H.P. University shall be applicable.

4. Scheme of Examination
   The pass percentage in each subject will be 40%.

i) Theory Papers:
   For Regular students each paper will be of 100 marks (70 marks for End Semester Examination and 30 marks for Continuous Comprehensive Assessment) and duration of each paper will be 3 hours.
   For ICDEOL students each theory paper will be of 100 marks and of 3 hours duration.
   In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5 to 10 parts, out of the entire syllabus. In all, five questions are to be attempted.
i) **Continuous Comprehensive Assessment (CCA)** accounting for 30% of the final grade that a student gets in a course; and

ii) **End-Semester Examination (ESE)** accounting for the remaining 70% of the final grade that the student gets in a course.

**Note:**
1. A student will have to pass both the components (i.e. CCA and ESE) separately to become eligible to be declared successful in a course.
2. The ratio of Continuous Comprehensive Assessment (CCA) and End-Semester Examination (ESE) would remain unchanged (i.e. 50:50) for the students of the academic sessions admitted in 2013 and 2014.

**Mid-Term (Minor) Test** – There will be one mid-term test, to be conducted when approximately 2/3 of the syllabus has been covered. This mid-term test will be for 15 marks. Mid-term test will be conducted by the college in consultation with the teacher.

**Note:**
Mid-term (Minor) Test will be of 30 marks for the students of the academic sessions admitted in 2013 and 2014 respectively.

**Seminar/Assignment/Term Paper** – The remaining 10 marks of the CCA will be awarded on the basis of seminar/assignment/term paper etc. that the course teacher might give to the students.

**Note:**
Seminar/Assignment/Term Paper will be of 15 marks for the students of the academic sessions admitted in 2013 and 2014.

**End-Semester Examination (ESE):** The remaining 70% of the final grade of the student in a course will be on the basis of an end-semester examination (ESE) that will be for three hours duration and will be covering the whole syllabus of the course.

**Note:**
1. Only those students will be allowed to appear in the ESE who have been successful in the CCA.
2. The remaining 50% of the final grade for the students of the academic sessions 2013 and 2014 in a course will be on the basis of an end-semester examination (ESE) that will be for three hours duration and will be covering the whole syllabus of the course.

A student, who fulfills all the requirements for appearing in a semester examination, is unable to appear in the examination or to complete it on account of his/her own serious illness, accident, or on account of the death of near relative (mother, father, brother and sister), or the dates of state or national level examinations falls on dates of the semester exams may be allowed to appear in the semester exam in the next academic year when examination for that semester is due. Permission to sit in the examination will be permitted by college Principal/Director on the production of a valid certificate/document.
from the competent authority. The college will send the name of the student to the Registration and Migration Cell for information.

The question paper for the ESE may have any one of the following patterns:

**Part A**
Fifteen objective type questions (MCQ / True or False / fill in the blanks etc.) for 1 mark each.  
\[15 \times 1 = 15 \text{ marks}\]

**Part B**
Ten short answer (25 words) type questions for 2 marks each.  
\[10 \times 2 = 20 \text{ marks}\]

**Part C**
Ten questions of Medium Length Answer type (50 words) for 4 marks each of which five will have to be answered.  
\[5 \times 4 = 20 \text{ marks}\]

**Part D**
Three questions of long answer (400 words) type, of which one is to be attempted for 15 marks.  
\[15 \times 1 = 15 \text{ marks}\]

**Total marks (A + B + C + D)**  
\[15 + 20 + 20 + 15 = 70 \text{ marks}\]

**OR (PREFERABLY)**

**Part A (Compulsory)**
Compulsory of 30 marks consisting of 10 objective type questions of 1 mark each (in MCQ/True False/Fill in the blanks or such type), and five short answer questions (25 to 50 words) of 4 marks each covering whole of the syllabus.

**Part B (UNIT I)**
One question out of two questions each of 10 marks. Each of these questions may contain sub parts and will be long type.

**Part C (UNIT II)**
One question out of two questions each of 10 marks. Each of these questions may contain sub parts and will be long type.

**Part D (UNIT III)**
One question out of two questions each of 10 marks. Each of these questions may contain sub parts and will be long type.

**Part E (UNIT IV)**
One question out of two questions each of 10 marks. Each of these questions may contain sub parts and will be of long type.

**Total marks (A + B + C + D + E)**  
\[30 + 10 + 10 + 10 + 10 = 70 \text{ marks}\]
The result would be declared by the Controller of Examination of the Himachal Pradesh University and the degree (or certificate or diploma as the case may be) conferred. A candidate shall be eligible for the conferment of the Bachelor’s degree only if he / she has earned the minimum required credits for the programme prescribed in the regulations (i.e. (a) For a bachelors degree with major (honours): 120 credits in total and minimum of 9 credits in Compulsory Courses; 56 credits in Core Courses; a minimum of 40 credits in Elective Courses (minimum 20 credits in each of the minor subjects, or (b) For a bachelors degree: 106 credits with 48 credits in Core Courses; 48 credits in Elective Courses (24 credits in each of the two subjects studied) and minimum of 9 credits in Compulsory Courses); and a minimum of 1 credit of GI and H.

ii) Practical Examination
Max. Marks: 50

CCA (Continuous Comprehensive Assessment): 35
ESE (End Semester Examination): 15

Duration: 3 hours.
Practical exam will be conducted by the external examiner from the panel submitted to The Chairman, Computer Science Department, Himachal Pradesh University and duly approved by the competent authority of the university, Himachal Pradesh University, Shimla.

iii) Project Work
Max. Marks: 50

CCA (Continuous Comprehensive Assessment): 35
ESE (End Semester Examination): 15

In the 6th semester the student has to develop one project, which will be evaluated by the external examiner from the panel submitted to The Chairman, Computer Science Department, Himachal Pradesh University, and duly approved by the university authority/evaluation branch, Himachal Pradesh University, Shimla on the following basis:
1. Project Report 10 Marks (To be evaluated externally)
2. Seminar 15 Marks (To be evaluated internally)
3. Viva Voce 25 Marks (To be evaluated externally)

5. Medium of Instruction
English will be the medium of instruction as well as examination

6. Promotion Rule
As per the University norms.
HIMACHAL PRADESH UNIVERSITY
BACHELOR OF COMPUTER APPLICATIONS (BCA)
Effective from 2012 onwards

First Year (1st Semester)

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Paper Title</th>
<th>Credit</th>
<th>ESE</th>
<th>CCA</th>
<th>Max. Marks</th>
<th>Exam Duration Hours</th>
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<td>Applied English</td>
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<td>BCA0104</td>
<td>C Programming</td>
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Total 600

First Year (2nd Semester)

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Total 600
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**Total** 600

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<td>BCA0403</td>
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<td>BCA0404</td>
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<td>BCA0405</td>
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<td>BCA0404(P)</td>
<td>Internet Technology &amp; Web Page Design Lab-VIII</td>
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**Total** 600
### Third Year (5\textsuperscript{th} Semester)

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**Total** 600

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**Total** 600
BCA0101 Mathematics-I

UNIT-I

Set theory, Relations, quadratic equations, sequence & series, binomial theorems, determinants, matrices.

UNIT-II

Rectangular co-ordinates, length of a line segment, section ratio, area of a triangle, equations of a straight line circles.

UNIT-III

Trigonometric functions, trigonometrical ratios of negative and associated angles, trigonometrical ratios of compound angles, multiple and sub multiple angles, Heights and distances.

UNIT-IV

Functions, limits and continuity, Derivative of functions, Maxima & Minima, Indefinite integrals and definite integrals.

Text & Reference Books:


Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.
UNIT- I

Comprehension: One unseen passages of 250-300 words in length with a variety of comprehension questions including 05 marks for word attack skills such as word formation and inferring meaning, finding opposites etc. The passage can be a factual passage (e.g., instruction, description, report etc.) or a literary passage (e.g., extract from fiction, drama, poetry, essay or biography), or a discursive passage involving opinion, (argumentative, persuasive or interpretative text).

UNIT- II

Vocabulary: Change the Number, Change the Gender, Words commonly misspelt, Antonyms, Synonyms, Fill up using correct determinant.

UNIT-III

Filling up the correct form types of the tense in the sentence: present/past/future tense with simple/continuous/perfect/perfect continuous forms, Reordering word groups in the sentence to make a meaningful sentence, Writing meaning of given word and using in the sentence. Conversion among various types of sentences: affirmative, interrogative sentences, negation, exclamations.

UNIT-IV

Composition: Composition on a given topic/title based on any current social, environment, health issues. Formal Letter Writing (invitation, accepting/rejecting an invitation, apology, welcome, thanking complements).

Text & Reference Books:

1. W. Standard Allen, "Living English Structure", (Orient Longman)
2. Wilford D. Best, "The Student’s Companion", (Rupa)

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.
UNIT-I

Introduction: Characteristics of Computers, Evolution of computers, Capabilities and limitations of computers, Generations of computers, Types of computers (micro, mini, main frame, supercomputers), Block diagram of computer, Basic components of a computer system0 Input unit, output unit, Arithmetic logic Unit, Control unit, central processing unit, Instruction set, registers, processor speed, type of processors.

UNIT-II


UNIT-III


UNIT-IV

Computer Software: Software and its Need, Types of software0 System software, Application software, System software0 operating system, utility program, programming languages, assemblers, compilers and interpreter, introduction to operation system for PCs-DOS, windows, linux, file allocation table (FAT & FAT32), files & directory structure and its naming rules, programming languages0 machine, assembly, high level, 4GL, their merits and demerits, application software and its types – word0 processing, spreadsheet, presentation graphics
Text & Reference books:


Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.
UNIT-I

Introductory Concepts: Types of programming languages, Introduction to C, some simple C programs, Desirable program characteristics.
C Fundamentals: C character Set, Identifiers and keywords, data types, constants, variables and arrays, Declarations, expressions, statements, Symbolic constants.

UNIT -II

Operators and expressions: Arithmetic operators, unary operator, Relational and logical operators, assignment operators, conditional operators, Library Functions.
Data Input and Output: Preliminaries, single character input, single character output, Entering input data, writing output data, the gets() and puts() function.

UNIT-III

Arrays: Defining an array, processing an array, passing arrays to functions, Multidimensional arrays, Arrays and strings.

UNIT-IV

Functions: A brief overview, Defining a function, accessing a function, function prototypes, passing arguments to a function, recursion.
Pointers: Fundamentals, Pointer declarations, Passing pointers to the functions, pointers and one dimensional array, dynamic memory allocation, Operations on pointers, arrays of pointers.
Text & Reference Books:


Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.
BCA0105 Office Automation Tools

UNIT -I

DOS commands: (internal (DIR, DATE, TIME, CLS, CD, RD, MD, PATH, TYPE, DEL, ECHO, COPY, REN, PROMPT, VOL, VER), external (ATTRIB, CHKDSK, DISKCOPY, DISKCOMP, XCOPY, TREE, DELTREE, DOSKEY, FORMAT, FIND, SORT, FDISK, MORE, SYS)), Concept of files & directories, Wild card characters, Redirection operators.


UNIT -II


UNIT -III


UNIT -IV

Presentations: Definition, Benefits, Features & Uses of PowerPoint, Menus, Toolbars, Creating and Editing Slides, Adding graphics, Multimedia, and Special Effects to Slides, Insert (picture, slide, text), Master slide, Views, Animation, Action buttons, Macros.
Text & Reference Books:


Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.
BCA0201 Mathematics-II

UNIT-I

Rolle’s Theorem, Lagrange’s Mean Value Theorem, Cauchy’s Mean Value Theorem, their geometrical significance and applications. Successive differentiation and Leibnitz Theorem.

UNIT-II

Number system: division algorithm, greatest common divisor, Least common multiple, congruence relation, Integer arithmetic, Modular arithmetic.

UNIT-III


UNIT-IV

Ring: commutative ring, ring with unity, Ring of Polynomials, ring of functions, Elementary properties of ring. Fields.

Text & Reference Books:


Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.
UNIT –I
Vocabulary: Fill up using correct form of verb, Usage of the adverb, adjective etc, Write Antonym of the given word and use both the given word and its antonym in the single sentence clarifying meaning and usage, Give different meanings to Synonyms and use them in sentences, Give meaning and make sentences using idioms.

Grammar: Conversion among various types of the tenses in the sentence: present/past/future tense with simple/continuous/perfect forms, Conversion between Direct/Indirect speech, Conversion between active/passive voice, Conversion among various types of sentences: affirmative, interrogative sentences, negation, exclamations.

UNIT –II
Skills in Writing: letters, official/business correspondence, CV’s, Tech. Reports/types, Precis, comprehension, Paragraph writing (200 word) on current topics, writing notices, agenda, circulars.

UNIT –III
Secretarial Skills: Effective communication, listening and feedback skills, telephone handling, Attending meeting, preparing of agenda, writing of minutes, summaries, Handling problem situations, Control of voice and proper use of phonetics.

UNIT –IV
Presentation and Discussion Skills: Types of communication, Barriers to Communication, Effective use of kinesics, Planning interviews and making presentations, Taking initiatives, especially in group discussions, overcoming nervousness, making audience analyses and establishing leadership.
Text & Reference Books:

4. Shiv K. Khera, “You can Win”.

Note: In each theory paper, nine questions are to be set. Two questions are to be set from each Unit and candidate is required to attempt at least one question from each unit. Question number nine will be compulsory, which will be of short answer type with 5010 parts, out of the entire syllabus. In all, five questions are to be attempted.
UNIT-I

Fundamentals of semiconductor physics: Energy bands in solids, pn junction diode depletion region, forward and reverse bias, diode as switch; Bipolar Junction Transistor, transistor configurations, bipolar junction transistor (CE configuration) as switch, Saturated and non-saturated logic, Integrated Circuits, characteristics of digital logic families: TTL, ECL, CMOS.

UNIT-II

Logic gates: AND, OR, NOT Gates and their Truth Tables, NOR, NAND & XOR gates, Boolean algebra, Basic Boolean Law’s, Demorgan’s theorem, Boolean function and their truth tables.

UNIT-III


UNIT-IV


Text & Reference Books:


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UNIT-I

Preliminaries: Concept & notation, common operation on data structures, algorithm complexity, time-space trade off between algorithm, physical & logical representation of different data structures.

Arrays: Arrays defined, representing arrays in memory, Various operation (traversal, insertion, deletion), Multidimensional arrays, Sequential allocation, Address calculation.

UNIT-II

Linked List: Definition, type (linear, circular, doubly linked, inverted), representing linked lists in memory, advantages of using linked list over arrays, various operations on Linked list (traversal, insertion, deletion).

UNIT-III

Stacks: Definition & concepts of stack structure, Implementation of stacks, Operation on stacks (push & pop), Application of stacks (converting arithmetic expression from infix notation to polish and their subsequent evaluation), quick sort technique to sort an array, recursion).

Queue: Definition & concept of queues, implementation of queue, operation on queues (insert & delete), circular queue.

UNIT-IV

Trees Structures: Tree, Binary Trees, Tree Traversal Algorithms (Pre-Order, In-Order, Post-Order), Threaded Trees, Binary Search Trees.

Sorting & Searching: Selection sort, Bubble sort, Merge sort, Radix sort, Quick sort, Sequential search, Linear search and their complexity.

Text & Reference Books:

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UNIT-I

Introduction To Database Concepts: Data Modeling for a Database, Fields, Records and Files, Abstraction and Data Integration, Database Architecture, Users, Structure of DBMS, Advantages and Disadvantages of DBMS. Data Models: Entity, Attribute, Relationship, Data Model Classifications, File based, Traditional, Semantic, Entity-Relationship Model.

UNIT-II


UNIT-III

Relational Database Design: Relational Scheme and Relational Design, Functional Dependency, Normal forms (First, Second, Third, Boyce Code), Decomposition and dependency preservation, Multi-valued dependency.

UNIT-IV

Ms Access: Tables (Creation/Design structure, Data Entry), Primary keys, Foreign Keys Master-Detail Table, Query (Select, Make-Table, Update, Append, Delete) Form (Modal, Modeless), Relationships Report (Creation of a simple report from a table and from a query).

Text & Reference Books:
2. Bipin C. Desai, “An Introduction to Database Management System”.

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BCA0301 Mathematics-III

UNIT-I

Order, degree, solution and formation of a differential equation. Standard techniques of solving linear differential equations with constant coefficients, Cauchy’s and Legendres.

UNIT-II

Complex numbers and their representation in a plane. Argand diagram, algebra of complex numbers, modulus and arguments of a complex number, square root of a complex number and cube roots of unity, triangle inequality, De-Moivre’s theorem, roots of complex numbers.

UNIT-III

Primes, Primarily testing, Factorization, Chinese Remainder Theorem, Quadratic congruence, Exponentiation and Algorithm

UNIT-IV

Finite fields, GF(p) fields, GF(p^n) fields, Polynomials and their operations over GF(2) and GF(2^n)

Text & Reference Books:


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UNIT-I


UNIT-II

Management: Meaning, definition and importance, Management concept, functions, Principles of management and Management Process.

UNIT-III


UNIT-IV


Text & Reference Books:


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UNIT 1

Data representation: number systems, decimal to binary, octal and hexadecimal conversion and vice versa, binary coded decimal numbers, hamming code for error detection, alphanumeric codes, arithmetic operations, binary addition and subtraction, addition/subtraction of numbers in 1’s and 2’s complement notation for binary numbers and 9’s and 10’s complement notation for decimal numbers, binary multiplication and division, BCD arithmetic, floating point addition and subtraction.

UNIT II

Register Transfer Language: Register transfer, Bus and Memory transfer (three-stage bus buffers, memory transfer), arithmetic micro-operations (Binary Adder, Binary-adder-Subtractor, binary incrementer, arithmetic circuit), Logic micro-operation (list op logic microOperations, hardware implementation), shift microOperations (hardware implementation), arithmetic logic shift unit.

UNIT III

Instruction codes: (stored program organization, indirect address), computer registers (common bus register), computer instructions (instruction set completeness), timing and control, instruction cycle (fetch and decode, types of instruction, register-reference instructions), Micro programmed control, control memory, addressing sequencing (conditional branching, mapping of instructions, subroutine)

UNIT IV

Central Processing Unit: Introduction, general register organization (control word, examples of micro-operations), stack organization (register stack, memory stack, reverse polish notation, evaluation of arithmetic expressions), instruction formats (three-address instructions, two address instructions, one-address instructions), addressing modes, data transfer and manipulation (data transfer instructions, data manipulation instructions, arithmetic instructions, logical and bit manipulation instructions, shift instructions), Program control (status bit conditions, conditional branch instructions, program interrupt, types of interrupt).
Text and reference books:


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UNIT-I
Object oriented programming: Need for OOP, object oriented approach, characteristics of OOP language- objects, classes, Inheritance, Reusability, Polymorphism, overloading advantage of OOP, relationship between C and C++.
Programming Basic: Basic program construction, output using cout, preprocessor directive, comments, integer variables, character variables, input with cin, Type bool, setw Manipulator, type float, type conversion, arithmetic operators, relational operators, logical operators.

UNIT-II
Loops and decision control statements: loop- for, while, do, decision-if, if- else, switch, conditional operator, other control statements- break, continue, goto.
Structures and functions: structures, Accessing structure members, structure within a structure, Enumerated Data type, simple functions, passing arguments to functions, Returning values from functions, reference arguments, overloaded functions, storage classes, scope resolution operator.

UNIT-III
Objects and classes: A simple class, classes and objects, specifying a class, using a class, C++ objects as physical objects, C++ objects as data types, Constructors, objects as function arguments, returning objects from functions.
Arrays: Array fundamental0defining array, array elements, Accessing array elements, Initializing arrays, multidimensional arrays, passing arrays to functions, array of objects, strings-string variables, Avoiding Buffer overflow, string constants, array of strings string as class members, Standard C++ string Class.

UNIT-IV
Operator overloading: Overloading unary operators- the operator keyword, operator arguments, operator return values nameless temporary objects, limitation of increment operators, overloading Binary operators, data conversion, Pitfalls of operator overloading and conversion.
Inheritance: Derived class and base class, specifying the derived class, accessing base class, members, derived class constructors, overriding member functions, class hierarchies, public and private Inheritance, levels of inheritance, multiple inheritance, Ambiguity in Multiple Inheritance, Aggregation- Classes Within Classes.
Text & Reference Books:


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BCA0305  Desktop Publishing and Designing  

UNIT-I


UNIT-II

Page Layout: Different page format / Layouts, News paper page format, Page orientations, Columns & Gutters, Printing in reduced sizes.
Page Maker: Introductions To Page Maker Icon and help, Tool Box, Styles, Menus etc., Different screen Views, Importing text/Pictures, Auto Flow, Columns, Master Pages and Stories, Story Editor, Menu Commands and short0cut commands, Spell check, Find & Replace, Import Export etc., Fonts, Points Sizes, Spacing etc., Installing Printers, Scaling (Percentages), Printer setup.

UNIT-III

Adobe Photoshop: Introduction to Photoshop & Flash, Documents, Various Graphic Files

UNIT-IV


Text & Reference Books:

1. Page maker 4.0 & 5.0 by b.p.o. publications.
2. Prakhar complete course for dtp (coreldraw, pagemaker, photoshop)

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BCA0401 Personnel Management

UNIT-I

UNIT-II

UNIT-III
Human resources Development: Training and Development and Promotion and incentives, retirement benefits.

UNIT-IV
Performance Appraisal and Job Evaluation, Employee remuneration and various incentive plans.

Text & Reference Books:


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BCA0402 Accounting

UNIT-I


UNIT-II

Final Account: Manufacturing Account, Trading Account, Profit and Loss Account and Balance Sheet.

UNIT-III


UNIT-IV

Management Accounting: Meaning, importance and Scope of Management Accounting Brief introduction to the tools of financial statements, Analysis (Ratio, Fund Flow and Cash Flow Analysis).

Text & Reference Books:


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UNIT -I


UNIT –II

Feasibility studies: Technical, Operational, Behavioral and economic feasibilities, cost and benefit analysis.

UNIT –III

System requirement specification and analysis: Fact finding techniques, Data Flow Diagrams, Data Dictionaries, process organization and interaction, Decision Analysis, Decision Trees and Tables. Top down and bottom up variance, Audit trails.

UNIT –IV

Detail Design: Modularization, module specification, file design, system development involving databases. System control and quality assurance: Design objectives reliability and maintenance, software design and documentation tools, unit and integration testing, testing practice and plans, system control.

Text & Reference Books:


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BCA0404  Internet Technology & Web Page Design

UNIT-I
Internet: Evolution of Internet, Internet Application, Network requirements, Bandwidth, Internet features (Electronic Mail, Newsgroups, FTP Archive, Real Time Activity, Video, Audio, Search Engine).

UNIT-II
World Wide Web: Definition, WWW Browsers, WWW Servers, Dial-Up SLIP, PPP Access, Dedicated line, ISDN. TCP/IP Connectivity- DNS Servers, Domain Names Registration process, IP addressing, Routing with TCP/IP Basics

UNIT-III
HTML: Text formatting, Data, Tables, Table layout, Images, HTML Interactivity, URLs, HTTP, NNTP, Hyperlinks, Menus & Image Maps, HTML Form, Embedded objects in HTML, Web Typography, Approaching Web Typography, Graphics and Type, Families and Faces, Type forms, Color and Type, Adding Graphics, Adding Graphics with the Image Element, Using images as links, Creating Image Maps, Working with Image Files, Layout Technology, Standard HTML Formatting, Tables, Frames,

UNIT-IV
CSS: Formatting your site with Cascading Style Sheets, Seeing Style Sheets in Action, Understanding CSSI's Advantages and Limitations, Making HTML and CSSI's, Making HTML and CSSI work together, Learning How CSSI Works, Using CSSI Properties. XML, XML Language, SMGL, Linking in XML.

Text & Reference Books:
1. Internet Get Started: BPB Publications.
4. Tauber, “Mastering Front Page 2000” BPB.
6. HTML Complete: BPB Publisher.

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BCA0405  Programming in Visual Basic  

UNIT –I

Open, close existing project, possible menu variations, use the Form Designer, Code Editor, Solution Explorer, work with Visual Studio's windows.
Design a form: Add controls to a form, Set properties, common properties for forms and controls, add navigation features, property settings, use Document Outline view, name and save files of a project, Design and property settings for the form, Refer to properties, methods, events, Add code to a form, create an event handler for the default event of a form or control, code with a readable style, code comments, detect and correct syntax errors.
Use the toolbar buttons, collapse or expand code, print source code, code snippets, Smart Compile Auto Correction feature, My feature and debug a project.

UNIT –II

Work with numeric and string data: Work with the built-in value types- Declare and initialize variables, declare and initialize constants, code arithmetic expressions, code assignment statements, work with the order of precedence, use casting, change the type semantics, work with strings, declare and initialize a string, join and append strings.
Data types, use Visual Basic functions to convert data types, use methods to convert data types, formatting functions, use methods to convert numbers to formatted strings,
Code control structures: Code Boolean expressions, relational operators, logical operators, conditional statements, If statements, Select Case statements, loops, For loops, Do loops, use Exit and Continue statements, Debugging techniques for programs with loops.

UNIT –III

Code procedures and event handlers: Code and call procedures- Sub procedures, call Sub procedures, pass arguments by reference and by value, code and call Function procedures, work with events, start an event handler for any event, handle multiple events with one event handler, use the Code Editor to start an event handler, add and remove event writing.
The Function procedure, event handlers, Message box
Handle exceptions and validate data: Introduction to data validation and exception handling, use the IsNumeric function, display a dialog box for error messages, exception handling works, Use structured
exception handling, catch an exception, properties and methods of an exception, throw an exception, application with exception handling. 
Validate data: Validate a single entry, use generic procedures to validate an entry, validate multiple entries, application with data validation, dialog boxes, code, Difference between Validating event and masked text box.

**UNIT IV**

Arrays and collections: one-dimensional arrays, create an array, assign values to the elements of an array, use For loops to work with arrays, use For Each loops to work with arrays, work with rectangular arrays, create a rectangular array, assign values to a rectangular array, work with rectangular arrays, create a jagged array, assign values to a jagged array, work with jagged arrays, use the Array class, refer to and copy arrays, code procedures that work with arrays, Work with list, sorted list, queues, stacks, array list. 
Dates and strings: create a DateTime value, get the current date & time, format DateTime values, perform operations on dates and times, work with strings, procedures for validating user entries, Format numbers, dates, and times, Format numbers. 
Types of controls, combo boxes, list boxes, check boxes, radio buttons, group boxes, use Tab Order view to set the tab order. 
Multiform projects: Add a form to a project, rename a form, change the startup form for a project, display a form as a dialog box, pass data between a form and a custom dialog box, Use the MessageBox0 Display a dialog box and get the user response, use the FormClosing event.
Debug an application: set the debugging options, break mode, use the Edit Continue feature, breakpoints, debugging windows, Locals window to monitor variables, use the Autos window to monitor variables, Watch windows to monitor expressions, Call Stack window to monitor called procedures, Output window to get build or debugging information.

**Text & Reference Books:**

2. Steven Holzner Visual Basic 6 programming, Black Book, Dream tech press

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UNIT –I


UNIT –II


UNIT –III

Memory Management: Partition, Paging, Segmentation, Types Of Memory Management Scheme , Bare Machine, Resident Monitor, Swapping, Multiple Partition, Virtual Memory, Demand Paging.

UNIT –IV


Text & Reference Books:

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UNIT-I


UNIT-II

Consumer oriented E-Commerce: Consumer oriented applications, mercantile Process Models, consumer’s perspective, Merchant’s perspective. Advertising and marketing on the Internet: The new age information based marketing, Advertising on the Internet Active or push based advertising models, Passive or pull based advertising models. Guidelines for Internet advertising. Online marketing process.

UNIT-III


UNIT-IV

Securing the Business on Internet: security Policy, Procedures and Practices, transaction security, CRM, what is e-CRM, it’s applications, The e-CRM marketing in India, Major Trends, Global Scenario for e-CRM, CRM utility in India.

Text & Reference Books:
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Management Information System

UNIT –I


UNIT –II


UNIT –II


UNIT –IV


Text & Reference Books:

2. Surendra Basandra, “Computers Today”.

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BCA0504  ASP.Net Technologies

UNIT – I
Introducing .NET: Microsoft web development, Move from workstation to distributed computing, Internet factor, importance of .net platform OS neutral environment, device independence, wide language support, internet based component services.
.NET framework: Common language runtime (CLR), code management and execution, security support, error handling and garbage collection, .net framework class libraries 0 System classes, data and XML classes, windows form and drawing classes, web classes.
Features of .NET framework: ASP.NET web forms and web services 0 Web page authoring & server controls, ASP.NET infrastructure.

UNIT – II
VB.NET : Introduction, statement, lines, comments, operators, procedures, variables 0 implicit, explicit, constants, parameters, arrays, branching, looping, objects, classes, inheritance, accessibility of inherited properties and methods, overriding methods.
System class, working with numbers, manipulating strings, DateTime arithmetic, converting values, formatting values, managing arrays.
Namespace and assemblies, Relating namespaces and DLL assemblies, creating assemblies, importing assemblies, using imported assemblies, compiling with imported namespace.

UNIT – III
ASP.NET Web Forms: Web forms code model, In-page vs. CodeBehind format, web form object life cycle, handling client side events on the server, web form event handling, define and respond web form control events, AutoPostBack property, automatic state management with web forms.
HTML sever control: definition, RunAt sever attribute, HTML control class, General controls-Anchor, image, form, division, span, Table control, Input Control.
Web server Control: Web Control class, General control- Hyperlink, link button, image, label, Panel, Form Controls, Table controls.

UNIT – IV
Web form List Control: Simple List controls, Template List controls. Validation Controls: Definition, properties and methods of validation controls, validation controls 0 RequiredFieldValidator, CompareValidator, RangeValidator, RegularExpressionValidator, CustomValidator, ValidationSummary.
User Controls: Definition, Markup0Only User Control, Custom properties, handling events and loading user controls dynamically.
Text & Reference Books:


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UNIT-I

Frequency distribution, Histogram, Frequency Polygram, Arithmetic Mean, Median, mode, geometric Mean, Harmonic Mean, Dispersion, Measures of Dispersion, Coefficients of Dispersion.

UNIT-II


UNIT-III

Mathematical expectation, Expected value of function of a random variable, Properties of expectation, Properties of variance, Covariance.

UNIT-IV

Correlation, Karl Pearson’s Coefficient of correlation calculation of the correlation, coefficient for a biovariate frequency distribution, rank correlation.

Text & Reference Books:


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BCA0601  Computer Networks  

UNIT-I

Introduction to Communication Network: Computer Networks, (Need, uses, and Advantages of Computer Network), Network Models (Peer0to0Peer0Network, Server0based Network, Client0Server Network), Network components, Network Topology (Star, Ring, Bus, Mesh, Tree, Hybrid, Advantage and Disadvantage of each types.), Types of Networks (LAN, MAN, WAN), Internet (Brief History, Internet Today, Protocol and Standard ).

UNIT-II

Error Detection and Correction: Types of errors (Single–bit0error, Burst0Error), Error Detection (Redundancy, Parity check, CRC, Checksum), Error correction (FEC, Hamming code, Burst error corrections ) Data Communication Channel and Media, Conductive Media (Twisted-pair cable, Coaxial cable), Fiber optics (Characteristic of light, Types of Fiber optics), Wireless Transmission, (Microwaves, Infrared, Radio waves).

UNIT-III

OSI0Reference Model: OSI Model, OSI Physical Layer Concepts, DLL, Network Layer, TL, SL, PL and AL Concepts. Internet model / TCP/IP Model and Protocols, Modem, DSL, Cable Modem, ISDN, Real world network (Ethernet, Ethernet operation, frame format, Ethernet characteristic, cabling and components) Token Ring and Token Bus networking Technology. Network Connectivity, Repeater, Hub-(Active, Passive and Intelligent), Bridge0(Local, Remote and wireless), Routers (Static and Dynamic), switches and types of switches, Brouter and Gateways.

UNIT-IV

Text & Reference Books:

1. Andrew S. Tahanbaum, Computer Network, PHI.
3. Ata Elahi, Mehran Elahi, “Data, Network and Internal communication Technology”, Cengage Learning India

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BCA0602  Numerical Methods

UNIT-I

Representation of numbers: Decimal to Binary conversion, Floating point representation of numbers, Integer and real/floating point arithmetic, different types of errors, error in the approximation of a function, error in series approximation.

UNIT-II


UNIT-III

Interpolation, Finite difference and operators, Newton Forward, Newton Backward, Games forward, Games backward.

UNIT-IV

Numerical differentiation: Differentiating a Graphical function, Differentiating a Tabulated function- Equal and Un-equal intervals, Numerical integration, Newton-Cotes formula, Trapezoidal rule, Simpson’s 01/3rd and 3/8th rule, Weddle’s rule.

Text & Reference Books:

3. V. Rajaraman, Computer Oriented Numerical Methods, PHI.
4. S.S. Sastry, Numerical Method, PHI.

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BCA0603  Multimedia Technology  

UNIT-I


UNIT-II


UNIT-III


UNIT-IV

Video: Basics of Video Analog and Digital Video, How to use video on PC. Introduction to graphics accelerator cards, Brief note on various video standards NTSC, HDTV, Introduction to video capturing Media & instrument Videodisk. Virtual Reality Terminology Head Mounts Display (HMD), Boom, Cave, Input Devices and Sensual Technology

Text & Reference Books:


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UNIT – I


UNIT – II

Output Primitives: Line Drawing Algorithms (DDA, Bresenham’s), Circle Generating Algorithm(Midpoint Circle Drawing Algorithm), Ellipse Generating Algorithm, Midpoint Ellipse Generating Algorithm, Character Generation.

UNIT – III

2D Transformations: Translation, Rotation, Scaling, Reflection, Shear, Composite Transformation0Translation, Rotations, Scaling. Two Dimensional Viewing: Window-To-Viewport Coordinate Transformation

UNIT – IV

Clipping: Introduction, Clipping Operations, Point Clipping, Line Clipping(Cohen-Sutherland Line Clipping, Liang-Barsky Line Clipping, Nicholl-Lee-Nicholl Line Clipping), Polygon Clipping(Sutherland-Hodgeman Polygon Clipping, Weiler-Atherton Polygon Clipping), Curve Clipping, Text Clipping.

Text & Reference Books:


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UNIT – I


UNIT – II

Software Requirements Analysis & Specifications: Requirements Engineering, Types of Requirements, Feasibility Studies, Requirements Elicitation, Requirements Analysis Documentation, Validation and Management.

UNIT – III


UNIT – IV

Coding: Programming Principles & Guidelines, Coding Process, Refactoring, Verification.
Text & Reference Books:


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