UNIVERSITYOFKOTA,KOTA

BACHELOROFCOMPUTERAPPLICATION(BCA)Exam.2023-24

(Course Code 5450)

(Applicable for students admitted in Session 2023-24)

1. Eligibility: The basic eligibility for admission to the course is 10+2 in any discipline with minimum 48% marks, 5% relaxation in marks will be given to the SC /ST/OBC (except creamy layer) / SOBC / PH candidates. The admission in the course is based on merit of XIIclass.Reservationpolicywillbeapplicableasperthestategovernmentrules.
2. Selection: Based on merit in qualifying examination.

COURSE OBJECTIVE

The objectives of BCA course are:

- To provide strong foundation in field of Computer Science and Applications.
- To prepare the students with exceptional skills of problem solving, communication and leadership skills.
- To facilitate overall understanding of the requirements of the subjects.
- To prepare the students to provide professional solutions to real time problems.
- To train future industry professionals.
- To impart comprehensive knowledge with equal emphasis on theory and practice.
- To keep the students up-to-speed on all the latest and cutting edge technologies.

PROGRAMME OUTCOME

- Acquire Knowledge of Computer Science, applications, theory and algorithm principles in the design and implementing computer based system.
- To provide thorough understanding of nature, scope and application of computer and computer languages.
- To develop interdisciplinary approach among the students.
- Exhibit clarity on both conceptual and application-oriented skills of Computing, programming for higher studies in Post Graduate programs.
- To Work in the IT sector as system analyst, software developer, web developer, software tester, network administrator, system administrator etc.
- To enhance the skills for working in public sector and Government organizations.
- For providing Technical skill based Education in Schools and Colleges.
- Student will able to know various issues, latest trends in technology development and thereby innovate new ideas and solutions to existing problems.

Problem Solving through C Programming (BCA1002T)

Time: 3Hrs. Max. Marks:70

Min Pass: 28

UNIT-I

Algorithm and algorithm development: Definition and properties of algorithm, flow chart symbols, example of simple algorithms. Program design, errors: syntax error and semantic error, debugging, program verification, testing, documentation and maintenance.

UNIT- II

Variable names, data type and sizes, constants, declarations, arithmetic operators, relational and logical operators, type conversions, increment and decrement operators, bitwise operators, assignment operators and expressions, precedence and order of evaluation, standard input and output statements.

UNIT- III

Control Flow: Statements and blocks, if-else, nested if, switch, looping statement: while, for, do-while, break and continue, go-to and labels.

Arrays : declarations, integer and character array, reading and writing an array, one and two dimensional array, operation son arrays.

UNIT– IV

Functions and Program Structure: Basics of function, function definition and declaration, external variables,scoperules,headerfiles,staticvariables,registervariables,blockstructure,initialization,recursion,theCpreprocessor.

UNIT-V

Pointer : Pointers and addresses, pointers and function arguments, address arithmetic..

Structures:, typedef, unions.

Text/Reference Books

1. Computer science Volume I and II, Deendayalu R., Second Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Fundamentals of computers, RajaramanV., Second Edition, Prentice Hall of India Private Limited,New Delhi.
3. The C Programming Language, Kernighan B.W. and Ritchie D.M., Prentice Hall of India Private Limited, NewDelhi.
4. Howtosolveit by computers. Dromey R.,Prentice Hall ofIndia Private Limited, New Delhi.
5. Programming with C,E.Balaguruswamy, PHI
6. Practical Programming in C

https://ocw.mit.edu/courses/6-087-practical-programming-in-c-january-iap-2010/pages/lecture-notes/

PCSoftwarePackages(BCA1003T)

Time:3Hrs. Max. Marks:70

Min Pass: 28

UNIT– I

DOS: Introduction, history & versions of DOS, DOS basics- Physical structure of disk, drive name, FAT, file &directorystructureandnamingrules,bootingprocess,DOSsystemfiles,DOS commands: internal &external.

UNIT– II

GUIBasedOS:Concepts,Features,Structure,Desktop,Taskbar,StartMenu,MyComputer,RecycleBin,Accessories- Calculator, Notepad, Paint, Word-pad, Character Map, Explorer, Entertainment, Managing Hardware&Software-InstallationofHardware&Software,UsingScanner,SystemTools,Communication,SharingInformationbetween programs.

UNIT– III

WordProcessing:Features,Creating,SavingandOpeningDocumentsinWord,Interface,Toolbars,Ruler,Menus, Keyboard Shortcut, Editing, Previewing, Printing & Formatting a Document, Advanced Features of MSWord, Find & Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables&Charts,Convertingaworddocumentintovariousformatslike-Text,RichTextformat,Wordperfect,HTMLetc.

UNIT– IV

Worksheet: Worksheet basics, creating worksheet, entering into worksheet, heading information, data, text, dates,alphanumeric values, saving & quitting worksheet, Opening and moving around in an existing worksheet, Toolbarsand Menus, Keyboard shortcuts, Working with single and multiple workbook, working with formulae &cellreferencing, Auto sum, Copying formulae, Absolute & relative addressing, Worksheet with ranges, formatting ofworksheet, Previewing & Printing worksheet, Graphs and charts, Database, Creating and Using macros, Multipleworksheets-concepts,creatingand using.

UNIT– V

IntroductiontonPowerPoint:Creatingslideshowwithanimations,DesigningPresentations.
Case Study of web editing tool and DBMS tool such as: Front Page, Ms-Access Creating & using databases inAccess.

Text/ReferenceBooks

1. Introduction to computers byP.K. Sinha&PritiSinha,BPBPublication,1992.
2. Microsoft2000,8 in1 byJoeHabraken, PHI
3. WindowXP Computer Reference, BPBPublication.
4. ITToolsandApplicationsbyA.Mansoor,PragyaPublications,Mathura.
5. DOSQuickReferencebyRajeevMathur,GalgotiaPublications.
6. Ms OfficeXPComputer,BPBPublications.

DatabaseManagementSystem(BCA2002T)

Time:3Hrs. Max. Marks:70

Min Pass: 28

Unit–I

Introduction:Purposeofthedatabasesystem,dataabstraction,datamodel,dataindependence,datadefinitionlanguage,datamanipulation language,data baseadministrator, databaseusers, overall structure.

Unit–II

ERModel:entities,mappingconstrains,keys,E-Rdiagram,reducingE-Rdiagramstotables,generation,aggregation,design of an E-Rdatabase scheme.

Unit –III

RelationalModel:Thecatalog,basetablesandviews.RelationalDataObjects-Domainsand Relations:Domains,relations, kindsof relations,relationsand predicates, relational databases. RelationalDataIntegrity–
Candidatekeysandrelatedmatters:Candidatekeys.Primaryandalternatekeys.Foreignkeys, foreign keyrules,nulls. Candidatekeys and nulls,foreignkeyandnulls.

Unit–IV

The SQL Language: Data definition, retrieval and update operations. Table expressions, conditionalexpressions,embedded SQL.
Views: Introduction,whatareviewsfor,datadefinition,datamanipulation,SQLsupport.

Unit–V

Fileandsystemstructure:overallsystemstructure,fileorganisation,logicalandphysicalfileorganization,sequentialandrandom,hierarchical,inverted, multilist,indexingandhashing, B-treeindexfiles.

Text/ReferenceBooks

1. DateC.J.,DatabaseSystems,AddisionWesley.
2. Korth,DatabaseSystemsConcepts,McGrawHill.
3. DatabaseManagementSystem,Ramakrishna,Gehkre,McGraw–Hill
6. Databasemanagementsystems,Leonalexis,leonMathews,"Vikashpublication
7. Databasesystem,Rob,coronel,7th edition,CengageLearning.
8. Introduction to Database System and Design Lecture notes by Prof. P.Sreenivasa Kumar, IIT Madras https://archive.nptel.ac.in/courses/106/106/106106095/
9. Database Management Systems Lecture Notes, e-Pathshala, NME-ICT, https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=fBYckQKJvP3a/8Vd3L08tQ==

BCA II YEAR III SEM

DATA STRUCTURES(BCA3001T)

Time:3Hrs. Max.Marks:70

Min Pass: 28

Unit I

Introduction: structure and problem solving, algorithmic notation, Data Structure, Algorithms and sub algorithms, introduction to algorithm analysis for time and space

Unit II

Primitive and non primitive data structure concept, representation and manipulation of strings, concept and terminology for non primitive data structure, concept of arrays, stacks, queues. Basic operations on arrays, stacks & queues.

Unit III

Linear data structures and their linked storage representation: pointers and linked allocation, linked linear list, singly linked list, application of linked linear lists.

Unit IV

Non Linear data structure: Trees, types of trees, Graphs and their representations, applications of graph.

Unit V

Sorting and searching: concept of sorting and searching, selection sort, bubble sort, merge sort, binary search

Text / Reference Books

1. An Introduction to Data Structures with Applications, Tremblay &Sorensons, TataMcgraw hills publications.
2. Data structure and algorithms, Aho., Alfred V., Pearson Education.
3. Fundamentals of Data structure in C, Horowitz, Ellis, Galgotia publication.
4. Introduction to Data Structure and algorithms with C++ , Rowe, Glenn W., Prentice , Hall
5. Data structures using C and C++ ,Langsun , Augenstein , Tenenbaum Aaron M, Prentice Hall
6. Data structure and Algorithm using C, R.S. Salaria
7. Data structures Lecture Notes, e-Pathshala, NME-ICT, https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=fBYckQKJvP3a/8Vd3L08tQ==
8. Introduction to Data structures, Lecture notes, Mumbai University https://mu.ac.in/wp-content/uploads/2021/05/Data-Structure-Final-.pdf

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25.04.2024 11:14

Python Programming(BCA3003T)

Time:3Hrs. Max.Marks:70

Min Pass: 28

Unit I

Introduction to Python: Python variables, Python basic Operators, Understanding python blocks. Python Data Types, Declaring and using Numeric data types: int, float etc.

Unit II

Python Program Flow Control Conditional blocks: if, else and else if, Simple for loops in python, For loop using ranges, string, list and dictionaries. Use of while loops in python, Loop manipulation using pass, continue, break and else. Programming using Python conditional and loop blocks.

Unit III

Python Complex data types: Using string data type and string operations, Defining list and list slicing, Use of Tuple data type. String, List and Dictionary, Manipulations Building blocks of python programs, string manipulation methods, List manipulation. Dictionary manipulation, Programming using string, list and dictionary in-built functions. Python Functions, Organizing python codes using functions.

Unit IV

Python File Operations: Reading files, Writing files in python, Understanding read functions, read(), Readline(), readlines(). Understanding write functions, write() and writelines() Manipulating file pointer using seek Programming, using file operations. Database Programming: Connecting to a database, Creating Tables,INSERT, UPDATE, DELETE and READ operations, Transaction Control,Disconnecting from a database, Exception Handling in Databases.

Unit V

Python packages: Simple programs using the built-in functions of packages matplotlib, numpy, pandas etc. GUI Programming: Tkinter introduction, Tkinter and PythonProgramming, Tk Widgets, Tkinterexamples.Python programmingwith IDE.

Text/Reference Books:

1. Wesley J. Chun, “Core Python Applications Programming”, 3rd Edition , Pearson Education, 2016
2. Charles Dierbach, “Introduction to Computer Science using Python”, Wiley, 2015
3. Jeeva Jose &P.SojanLal, “Introduction to Computing and Problem Solving with PYTHON”, Khanna Publishers, New Delhi, 2016
4. Downey, A. et al., “How to think like a Computer Scientist: Learning with Python”, John Wiley, 2015
5. Mark Lutz, “Learning Python”, 5th edition, Orelly Publication, 2013, ISBN 978- 1449355739
6. Python Programming Lecture notes, Prof. Ravindra D. Kulkarni, Mumbai university https://mu.ac.in/wp-content/uploads/2021/08/USIT-301-Python-Programming.pdf

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25.04.2024 11:14

PROGRAMMING WITH JAVA(BCA4003T)

Time:3Hrs. Max.Marks:70
Min Pass:28

Unit I

An overview of Java: Object oriented programming, Two paradigms, abstraction, the, OOP principles, Java class libraries, variables, arrays, Data types and casting, Operators, operator precedence, Control statements.

Unit II

Classes & Objects: Class fundamentals, declaring object reference variable, Introducing methods, constructors, the key word, garbage collection, Overloading methods. Inheritance and polymorphism: super class and subclass, protected members, Relationship between super and sub class. Inheritance hierarchy, abstract classes and methods, final methods and classes, nested classes, Type wrappers.

Unit-III

String handling: The string constructor, string length, special string operator character extraction, string comparison, searching string, modifying string, data conversion, changing the case of characters, string buffer.

Unit IV

Multithreaded Programming: The Java thread model, the main thread, creating thread, creating multiple thread, using is alive () and join ().

Unit-V

Exception handling: Exception handling fundamentals
Introduction to Applets: Applet Fundamentals

Recommended Books:

1. Herbert Schildt: JAVA 2 The Complete Reference, TMH, Delhi
2. Deitel: How to Program JAVA, PHI
3. U.K. Chakraborty and D.G. Dastidar: Software and Systems An Introduction, Wheeler Publishing, Delhi.
4. Joseph O'Neil and Herb Schildt: Teach Yourself JAVA, TMH, Delhi
5. Java Programming Lecture notes, MIT open courseware, https://ocw.mit.edu/courses/6-092-introduction-to-programming-in-java-january-iap-2010/pages/lecture-notes/
6. Java Programming Lecture Notes, Mumbai university, https://archive.mu.ac.in/myweb_test/MCA%20study%20material/M.C.A.%20(Sem%20-%20IV)-%20Java%20Programming.pdf

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25.04.2024 11:14

Web Technology (BCA5003T): Elective-1

Time: 3 Hrs. Max. Marks: 70

Min Pass: 28

Unit I

Introduction to Basics of Internet: Concepts of Internet: Domain, IP Addressing, Resolving Domain Names, Overview of TCP/IP and its Services, WWW.

Unit II

Introduction to HTML, Designing Pages with HTML, Essential Tags, Deprecated Tags, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags (DIV, MARQUEE, NOBR, DFN, HR, LISTING, Comment, IMG), Color and Background of Web Pages, Lists and their Types, Attributes of Image Tag.

Unit III

Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, concept of navigation, Different Section of a Page and Graphics, Footnote , Creating Table, Frame, Form and Style Sheet.

Unit IV

DHTML: Dynamic HTML, Document Object Model, Features of DHTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), The ID Attribute, DHTML Events.

Unit V

Web Designing Tools: Front Page Basics , Web Terminologies, Phases of Planning and Building Web Sites, The FTP, HTTP and WAP, Features, Front Page Views, Adding Pictures, Backgrounds, Links, Relating Front Page to DHTML.

Text / Reference Books

1. HTML Black Book – Steven Holzner – Dreamtech Press.Dreamtech Press.CoriolisGroup,U.S. (Edition .2000)
2. HTML, Java Script, DHTML, PERL, CGI – Evan Bayross – BPB. *Ivan Bayross* (2022)
3. http:www.W3schools.com/html/
4. Dynamic HTML webMagic/ jet douyer-hayden Development group Publisher *Wesley*
5. The DHTML Company only Robert mudrey, PHI.
6. Web Technology, Lecture Notes, e-Pathshala,NME-ICT
https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=fBYckQKJvP3a/8Vd3L08tQ==

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25.04.2024 11:14

Programming with PHP (BCA5004T) : Elective-2

Time: 3 Hrs. Max. Marks: 70

Min Pass: 28

Unit I

Introduction- open source-PHP – history- features-variables- statements- operators-conditional statements-if-switch-nesting conditions-merging forms with conditional statements-loops-while-do-for – loop iteration with break and continue.

Unit II

Array Anatomy of an Array, Creating index based and Associative array Accessing array, Element Looping with Index based array, Looping with associative array using each () and foreach(), Some useful Library function.

Unit III

Function What is a function, Define a function, Call by value and Call by reference, Recursive function, String Creating and accessing, String Searching & Replacing String, Formatting String, String Related Library function

Unit IV

Handling Html Form with Php Capturing Form, Data Dealing with Multi-value filed, and Generating File uploaded form, redirecting a form after submission.

Creating and accessing, String Searching & Replacing String, Formatting String, String Related Library function

Unit V

Session and Cookie Introduction to Session Control, Session Functionality What is a Cookie, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.

Text / Reference Books

1. Learning PHP, MySQL, books by ‘ O’ riley Press
2. Learning PHP, MySQL and JavaScript By Robin Nixon -O‟REILLY Publications
3. Programming PHP ByRasmusLerdorf, Kevin Tatroe, Peter MacIntyrePublisher"O'Reilly Media, Inc.", 2013
4. Robert Sheldon, Geoff Moes, ”Beginning MySQL”, Wrox,.Publisher . John Wiley & Sons, 2005
5. Web Programming with PHP Lecture Notes, Mumbai University https://mu.ac.in/wp-content/uploads/2021/06/USIT203-Web-programmig.pdf

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25.04.2024 11:14