Bachelor of Computer Application (BCA)
III year Syllabus

(With effect from 2015-16)

DEPARTMENT OF COMPUTER SCIENCE
University College, KU, Warangal-506009
### BCA III YEAR I SEMESTER

<table>
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<tr>
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<td>BCA51</td>
<td>Multimedia Systems And Applications</td>
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<td>70 30 100</td>
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<td>BCA52</td>
<td>Object Oriented Design in UML</td>
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### BCA III YEAR II SEMESTER

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MULTIMEDIA SYSTEMS AND APPLICATIONS

UNIT I


Images: Before You Start to Create, Making Still Images, Color.

UNIT II


Animation: The Power of Motion, Principles of Animation, Animation by Computer, Making Animations.

UNIT III


Making Multimedia: The Stages of a Multimedia Project, the Intangibles, Hardware, Software, Authoring Systems


UNIT IV

The Internet and Multimedia: Internet History, Internetworking, Multimedia on the Web.


Text book:


Reference books:

4. Spoken Tutorial on “GIMP”as E-resource for Learning:-http://spoken-tutorial.org
5. Spoken Tutorial on “Blender” as E-resource for Learning:-http://spoken-tutorial.org
OBJECT ORIENTED DESIGN IN UML

UNIT - I

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT II

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

UNIT - III

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.


UNIT-IV

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

Case Study: The Unified Library application

TEXT BOOKS

2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

REFERENCES

VISUAL PROGRAMMING

UNIT – I


Introduction to Problem Solving and Control Statements: Introduction, Algorithms, Pseudocode Algorithm, Control Structures, If ... Then Selection Statement, If ... Then ... Else Selection Statement, Nested If ... Then ... Else Selection Statements, Using the Debugger: Locating a Logic Error.

UNIT – II

Problem Solving and Control Statements: Introduction, For ... Next Repetition Statement, Examples Using the For ... Next Statement, Nested Repetition Statements, Select ... Case Multiple-Selection Statement, Do ... Loop While and Do ... Loop Until Repetition Statements, Using Exit to Terminate Repetition Statements, Using Continue in Repetition Statements, Logical Operators,


Arrays: Introduction, Arrays, Declaring and Allocating Arrays, Initializing the Values in an Array, Summing the Elements of an Array, Passing an Array to a Method, For Each ... Next Repetition Statement, Rectangular Arrays, Resizing an Array with the ReDim Statement.

UNIT – III

Windows Forms GUI: A Deeper Look: Introduction, Controls and Components, Creating Event Handlers, Control Properties and Layout, GroupBoxes and Panels, ToolTips, Mouse-Event Handling, Keyboard-Event Handling, Menus, MonthCalendar Control, DateTimePicker Control, LinkLabel Control, ListBox and CheckedListBox Controls, Multiple Document Interface (MDI) Windows, Visual Inheritance, Animation with the Timer Component. Exception Handling: A Deeper Look (Appendix)

Object-Oriented Programming - Classes and Objects: Introduction, Classes, Objects, Methods and Instance Variables, Account Class, Value Types and Reference Types, Class Scope, Object Initializers, Auto-Implemented Properties, Using Me to Access the Current Object, Garbage Collection, Shared Class Members, Const and ReadOnly Fields, Shared Methods and Class Math, Object Browser.
UNIT IV

Object-Oriented Programming - Inheritance and Polymorphism: Introduction, Base Classes and Derived Classes, Class Hierarchy, Constructors in Derived Classes, Protected Members, Introduction to Polymorphism - A Polymorphic Video Game, Abstract Classes and Methods,

Databases and LINQ: Introduction, Relational Databases, A Books Database, LINQ to Entities and the ADO.NET Entity Framework, Querying a Database with LINQ, Dynamically Binding Query Results, Retrieving Data from Multiple Tables with LINQ, Creating a Master/Detail View App.

TEXT BOOKS:

E-COMMERCE TECHNOLOGIES

UNIT I


UNIT II

The Internet and WWW: Evolution of Internet, Domain Names and Internet Organization (.edu, .com, .mil, .gov, .net etc.) , Types of Network, Internet Service Provider, World Wide Web, Internet & Extranet, Role of Internet in B2B Application, building own website, Cost, Time, Reach, Registering a Domain Name, Web promotion, Target email, Banner, Exchange, Shopping Bots

UNIT III


UNIT IV


BOOKS RECOMMENDED:
CRYPTOGRAPHY AND NETWORK SECURITY

UNIT I


UNIT II


UNIT III

Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, the RSA Algorithm,


UNIT IV


TEXT BOOK:


BOOK RECOMMENDED


NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Practical exercises based on concepts listed in theory using Presentation tools in office automation tool/ GIMP/Blender / Audacity/ Animation Tools/ Image Editors/ Video Editors.

Implement the followings using Blender -

1. Create an animation using the tools panel and the properties panel to draw the following – Line, pe, oval, circle, rectangle, square, pencil, brush, lasso tool
2. Create an animation using text tool to set the font, size, color etc.
3. Create an animation using **Free transform tool** that should use followings-
   - Move Objects
   - Skew Objects
   - Stretch Objects
   - Rotate Objects
   - Stretch Objects while maintaining proportion
   - Rotate Objects after relocating the center dot
4. Create an animation using layers having following features-
   - Insert layer, Delete layer, guide layer, Mask layer.
5. Modify the document (changing background color etc.) Using the following tools
   - Eraser tool
   - Hand tool
   - Ink bottle tool
   - Zoom tool
   - Paint Bucket tool
   - Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.
7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).

8. Create an animation having five images having fade-in fade-out effect.

9. Create an scene to show the sunrise (using multiple layers and motion tweening)

10. Create an animation to show the ripple effect.

11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.

12. Create an animation for bouncing ball (you may use motion guide layer).
PRACTICAL: VISUAL PROGRAMMING

NOTE:
- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:
1. Print a table of numbers from 5 to 15 and their squares and Cubes.
2. Print the largest of three numbers.
3. Find the factional of a number n.
4. Enter a list of positive numbers terminated by zero. Find the sum and average of these numbers.
5. A person deposits Rs. 1000 in a fixed account yielding 5% interest. Complete the amount in the account at the end of each year for n years.
6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
7. Read n numbers. Count the number of negative numbers, positive numbers and zeroes in the list. use arrays.
8. Read a single dimension array. Find the sum and average of these numbers.
9. Read a two dimension array. Find the sum of two 2D Array.
10. Create a database Employee and Make a form to allow data entry to Employee Form with the following command buttons:

   Employee Form
   Employee Name: 
   Employee Id: 
   Date of Joining: 
   Designation: 
   Department: 
   Address: 
   Basic Pay: 

   PREV  NEXT  FIRST  LAST  ADD  SAVE  DELETE  CANCEL
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ELECTIVE A1: ARTIFICIAL INTELLIGENCE

UNIT I

Introduction: Introduction to Artificial Intelligence, Background and Applications, Turing Test and Rational Agent approaches to AI, Introduction to Intelligent Agents, their structure, behavior and environment.

UNIT II


UNIT III


UNIT IV


BOOKS RECOMMENDED:
ELECTIVE B1: THEORY OF COMPUTATION

UNIT I


UNIT II
LEXICAL ANALYSIS: Introduction, Alphabets and Tokens in Computer Languages, Representation of Tokens and Regular Expression, Token Recognition and Finite State Automata, Lexical Analysis Tool
SYNTAX ANALYSIS: Introduction, Context-free Grammar and Structure of Language, Parser and its Types, Top-down Parser, Bottom-up Parser, Parser Generator Tool (Yacc),

UNIT III
OPTIMIZATION: Introduction, Hints on Writing Optimized Code at User Level, Construction of Basic Blocks and Processing.

UNIT IV
COMPILER WRITING TOOLS: Introduction, Lexical Tools, Syntactic Tools,

TEST BOOK:

REFERENCE BOOKS
ELECTIVE C1: DIGITAL IMAGE PROCESSING

UNIT - I


UNIT - II


Unit III


UNIT - IV

Model of image degradation/restoration process, noise models, Restoration in the Presence of Noise, Only-Spatial Filtering Periodic Noise Reduction by Frequency Domain Filtering, Linear Position-Invariant Degradations, inverse filtering, minimum mean square error (Weiner) Filtering, Color Fundamentals. Color Models, Pseudo color Image Processing., processing basics of full color image processing

TEXT BOOK:


REFERENCE BOOKS:

ELECTIVE A2: DATA MINING

UNIT I

Data Mining and Knowledge Discovery Process: data mining, Data Mining Differ from Other Approaches - The Knowledge Discovery Process-Introduction, Knowledge Discovery Process, Knowledge Discovery Process Models.

Data Understanding: data, Concepts of Learning, Classification, and Regression

UNIT II

Data Mining: Methods for Constructing Data Models: Unsupervised Learning: Clustering-From Data to information Granules or Clusters, Categories of Clustering Algorithms, Hierarchical Clustering, Objective Function-Based Clustering, Cluster Validity, random Sampling and Clustering as a Mechanism of Dealing with large datasets.

UNIT III


Supervised Learning: Bayesian Methods, Regression- Decision Trees, Rule and Hybrids Algorithms.

UNIT IV


Data Security, Privacy and Data Mining: Privacy in Data Mining, Privacy Versus Levels of Information Granularity, Distributed Data Mining, Collaborative Clustering.

Text Books:


References:

2. Principles of data mining , David hand Heikki Mannila , PHI publications-2004
ELECTIVE B2: ANDROID PROGRAMMING

UNIT I


UNIT II

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating a android project – Hello Word, run on emulator, Deploy it on USB-connected Android device.

UNIT III

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes.
User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu, and Dialog.

UNIT IV

Database: Understanding of SQLite database, connecting with the database.

Book Recommended:

ONLINE READING / SUPPORTING MATERIAL:
ELECTIVE C2: UNIX PROGRAMMING

UNIT I


UNIT II

The VI Editor: vi Basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions, Repeating the Last Command, Searching for a pattern, Substitution.
The Shell: The shells Interpretive Cycle, Shell offerings, Pattern Matching- The Wild Cards, Escaping and Quoting, Redirecton: The Three standard Files, /dev/null and /dev/tty: Two Special Files, Pipes, tee, Command Substitution, Shell Variables.

UNIT III


UNIT IV

File Management: File Structures, System Calls for File Management – create, open, close, read, write.

TEXT BOOK:
1. Unix System Concepts And Applications By Sumithaba Das (Tata MCGraw Hill)
2. Unix Net Work Programming By W.Richard Stevens(Phl/Addision Wesley Two Columns)

REFERENCE BOOK
1. Unix The Complete Reference By Rosen ,Host Farber And Rosinski-Tatamcgraw Hill
2. The Unix Programming Environment By Brian W. Kernigham& Rob Pike -Phi
PROJECT GUIDE LINES

1. Maximum 2 students shall be allowed to take up a project.
2. Guiding one project shall be considered as 4 hours of practical per week as the work load for the concerned internal guide.
3. Each student shall submit his/her project synopsis to the concerned guide within 15 days in consultation with internal guide from the commencement of the respective semester.
4. Each student has to carry out 2 project seminars compulsorily in project duration.
5. Each seminar will be considered for their internal assessment (IA).

**Scheme of valuation - 400 Marks**
- IA – 100 Marks
  - Synopsis - 20 Marks
  - Seminar 1 - 40 Marks
  - Seminar 2 - 40 Marks
- Dissertation – 300 Marks
  - Documentation - 150 Marks
  - Presentation / Demonstration - 100 Marks
  - Viva- 50 Marks
SCHEME OF QUESTION PAPER

FACULTY OF SCIENCES
Bachelor of Computer Application (BCA)
V/VI Semesters
KAKATIYA UNIVERSITY, WARANGAL
Code: Name of the Paper

Time: 3 hrs                                                                              Total Marks: 70

Section - A
1. Answer any six from the following                                                          (6 X 5 = 30)
   a. from unit I
   b. from unit I
   c. from unit II
   d. from unit II
   e. from unit III
   f. from unit III
   g. from unit IV
   h. from unit IV

Section – B
Answer all questions                                                                   (4 X 10 = 40)
2. (a) (OR) (b) from UNIT –I
3. (a) (OR) (b) from UNIT –II
4. (a) (OR) (b) from UNIT -III
5. (a) (OR) (b) from UNIT -IV