



RANI CHANNAMMA UNIVERSITY, BELAGAVI

Revised syllabus of BCA(BCA 4) course w.e.f. academic year 2019-20 and onwards

BCA revised syllabus (w.e.f. 2019-20 and onwards)							
Subject Code	Subject Title	Teaching Scheme Hrs/week		Examination			
		Theory	Practical	Exam. Duration (Hrs)	Marks		
					Theory/ Practical	IA	Total
BCA V Semester (w.e.f. 2019-20 and onwards)							
17BCASWET51	Software Engineering	4	--	3	80	20	100
17BCASPTT52	Software Programming and Testing	4	--	3	80	20	100
17BCACYST53	Cyber Security	4	--	3	80	20	100
17BCAPPYT54	Programming with Python	4	--	3	80	20	100
17BCANFCT55	.Net Framework Using C#	4	--	3	80	20	100
17BCAAPLP56	Android and Python Programming lab	--	4	3	80	20	100
17BCADNLP57	C# Lab.	--	4	3	80	20	100
BCA VI Semester (w.e.f. 2019-20 and onwards)							
17BCACLCT61	Cloud Computing	4	4	3	80	20	100
17BCAWDPT62	Web Designing and Programming	4	4	3	80	20	100
17BCABINT63	Business Intelligence	4	4	3	80	20	100
17BCAWPLP64	Web Programming Lab.	--	4	3	80	20	100
17BCAPADP65	Project- Application Development	--	9	3	240	60	300



17BCASWET51: Software Engineering

Teaching Hours: 4 Hrs/week

**Marks: Main Exam: 80
IA: 20**

UNIT-I

10Hrs

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, legacy software, Software Myths. A Generic View of Process: Software engineering-A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process Patterns, Process Assessment, personal and team process models. Process Models: The Waterfall model, Incremental process models, Evolutionary Process Models, Specialized Process Models, The Unified Process.

UNIT-II

10Hrs

Software Requirements: Functional and non-Functional Requirements, User Requirements, System Requirements, Interface Specification, the software requirement document. Requirement engineering process: Feasibility studies, Requirements elicitation and analysis, requirements validation, Requirements management. System models: Context Models, behavioral models, Data models, object models, structured method.

UNIT-III

10Hrs

Design Engineering: Design process and design quality, Design concepts, the design model, pattern based software design. Creating an Architectural Design: Software architecture, Data design, Architectural Styles and patterns, Architectural design, assessing alternative architectural designs, mapping data flow into software architecture. Modeling Component-level design: designing class – based components, conducting component-level design, object constraint language, designing conventional components. Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT-IV

10Hrs

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, system testing, the art of debugging. Product metrics: Software Quality, Frame work for product metrics, Metrics for Analysis Model, Metrics for Design Model, metrics for source code, metrics for testing, metrics for maintenance. Metrics for process and products: Software Measurement, Metrics for software quality.

UNIT-V

10Hrs

Risk management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM plan. Quality Management: Quality concepts, software quality assurance, Software Reviews, Formal technical Reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

References:

1. Roger S Pressman, Software engineering a practitioner's approach, Seventh Edition, Mc Graw Hill International Edition.
2. Ian Sommerville, Software Engineering, Seventh edition, Pearson education.

Additional Reading:

3. PankajJalote, Software Engineering- a Precise Approach, Wiley India, 2010.
4. Waman S Jawadekar, Software Engineering: A primer, Tata McGraw-Hill, 2008.
5. Stephan Schach, Software Engineering, Tata McGraw Hill.



17BCASPTT52: Software Practices and Testing

Teaching Hours: 4 Hrs/week

Marks: Main Exam: 50

IA: 20

UNIT I: 10 Hrs
Principles of Testing, Software Development Life Cycle Models (SDLC), Phases of Software Project, Quality, Quality Assurance and Quality Control, Testing, Verification and Validation, Life Cycle Models, White Box Testing: White Box Testing, Static Testing, Structural Testing, Challenges in White Box Testing.

UNIT II: 10 Hrs
Testing Techniques: Black Box Testing, Integration Testing, Top-Down Integration, Bottom-Up Integration, Bi-Directional Integration, Defect Bash, System and Acceptance Testing, Functional versus Non-functional Testing, Functional System Testing, Non-Functional System Testing, Acceptance Testing.

UNIT III: 10 Hrs
Performance Testing: Factors, Methodology, Tools, Process for performance testing, Regression Testing, Types, Testing of Object-oriented Systems, Usability and Accessibility Testing, approach, Quality factors, Aesthetics Testing, Accessibility Testing, Tools for Usability.

UNIT IV: 10 Hrs
Common People Issues: Perceptions and Misconceptions About Testing, comparison between Testing and Development Functions, Providing Career Paths for Testing Professionals, The role of the Ecosystem and a call for Action. Organization Structures for testing teams: Dimensions of Organization Structures, Structures in Single product Companies, Structures for Multi-Product Companies. (14.1 to 14.3).

UNIT V: 10 Hrs
Test Planning, Management: Test Planning: Preparation, scope management, Test approach, setting up criteria, Identifying responsibilities, test deliveries, testing tasks, activity breakdown, communication and risk management. Test Management: Choice of standards, Test Infrastructure Management, Integrating with Product release. (15.1 to 15.3) Software Test Automation: Introduction, Terms used, Skills needed, scope of automation: Identifying the types of testing amenable to automation.(16.1 to 16.4.1)

TEXT BOOKS:

Srinivasan Desikan, Gopaldaswamy Ramesh: Software testing Principles and Practices, 2nd Edition, Pearson, 2012.

REFERENCE BOOKS:

- Software Testing : Aditya Mathur.
- Software Testing, Ron Patton, Second Edition, SAMS Pearson Publication 2011
- The Craft of Software Testing, Brain Marick, Pearson Publication 2010



17BCACYST53: Cyber Security

Teaching Hours: 4 Hrs/week

**Marks: Main Exam: 80
IA: 20**

UNIT I 08 Hrs
Introduction to Cybercrime: Cybercrime definition and origins of the world, Cybercrime and information security, Classifications of cybercrime, Cybercrime and the Indian ITA 2000, A global Perspective on cybercrimes.

UNIT II 10 Hrs
Cyber offenses & Cybercrime: How criminal plan the attacks, Social Engg, Cyber stalking, Cybercafé and Cybercrimes, Botnets, Attack vector, Cloud computing, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit Card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by Mobile Devices, Registry Settings for Mobile Devices, Authentication Service Security, Attacks on Mobile/Cell Phones, Mobile Devices: Security Implications for Organizations, Organizational Measures for Handling Mobile, Devices-Related Security Issues, Organizational Security Policies and Measures in Mobile Computing Era, Laptops.

UNIT III 12 Hrs
Tools and Methods Used in Cyberline: Proxy Servers and Anonymizers, Phishing, Password Cracking, Keyloggers and Spywares, Virus and Worms, Steganography, DoS DDoS Attacks, SQL Injection, Buffer Over Flow, Attacks on Wireless Networks, Phishing, Identity Theft (ID Theft) Cybercrimes and Cybersecurity: The Legal Perspectives Why do we need Cyberlaw: The Indian Context, The Indian IT Act, Digital Signature and the Indian IT Act, Amendments to the Indian IT Act, Cybercrime and Punishment, Cyberlaw, Technology and Students: Indian Scenario.

UNIT IV 10 Hrs
Understanding Computer Forensics: Historical Background of Cyberforensics, Digital Forensics Science, The Need for Computer Forensics, Cyberforensics and Digital Evidence, Forensics Analysis of Email, Digital Forensics Lifecycle, Chain of Custody Concept, Network Forensics, Approaching a Computer Forensics Investigation, Setting of a Computer Forensics Laboratory: Understanding the Requirements, Computer Forensics and Steganography, Relevance of the OSI 7 Layer Model to the Computer Forensics and Social Networking Sites: The Security/Privacy Threats, Forensics Auditing, Anti Forensics.

UNIT IV 10 Hrs
Cybersecurity: Organizational Implications Cost of Cybercrimes and IPR Issues: Lesson for Organizations, Web Treats for Organizations: The Evils and Perils, Security and Privacy Implications from Cloud Computing, Social Media Marketing: Security Risk and Perils for Organization, Social Computing and the Associated Challenges for Organizations, Protecting People's Privacy in the Organization, Organizational Guidelines for Internet Usage, Safe Computing Guidelines and Computer Usage Policy, Incident Handling: An Essential Component, Intellectual Property in the Cyberspace of Cybersecurity, Importance of Endpoint Security in Organizations.

Reference:

1. Nina Godbole, SunitBelapure, Cyber Security, Wiley India, New Delhi
2. Marjie T. Britz , Computer Forensics and Cyber Crime An Introduction, Pearson publication,
3. Nina Godbole, Information Systems Security, Wiley India, New Delhi
4. Kenneth J. Knapp, Cyber Security & Global Information Assurance Information Science Publishing.
5. William Stallings, Cryptography and Network Security, Pearson Publication



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Additional Reading:

6. John W. Rittinghouse, William M. Hancock, Cyber Security Operations Handbook, ElsevierPub.
7. Dr. Surya Prakash Tripathi, Ritendra Goyal, Praveen Kumar Shukla ,”Introduction to Information Security and Cyber Law” Willey Dreamtech Press.

W.e.f. 2019-20 & onwards



17BCAPPYT54: Programming With Python

Teaching Hours: 4 Hrs/week

**Marks: Main Exam: 80
IA: 20**

Preamble: Python is an extremely easy-to-use programming language that has steadily gained in popularity over the last few years. Python is great for backend web development, data analysis, artificial intelligence, and scientific computing. Many developers have also used Python to build productivity tools, games, and desktop apps.. Some major ways in which Python is used commercially include Corel, D-Link, Eve-Online, HP, Honeywell, and Industrial Light and Magic. With the rise of big data, Python developers are in demand as data scientists, especially since Python can be easily integrated into web applications to carry out tasks that require machine learning.

UNIT I

10 Hrs

Introduction to Python: The basic elements of python, Branching Programs, Control Structures, Strings and Input, Iteration.Functions, Scoping and Abstraction: Functions and scoping, Specifications, Recursion, Global variables, Modules, Files, System Functions and Parameters.

UNIT II

10 Hrs

Structured Types, Mutability and Higher-Order Functions: Strings, Tuples, Lists and Dictionaries, Lists and Mutability, Functions as Objects

UNIT III

10 Hrs

Testing, Debugging, Exceptions and Assertion: Types of testing – Black-box and Glass-box, Debugging, Handling Exceptions, Assertions
Object-Oriented Programming: Abstract Data Types and Classes, Inheritance, Encapsulation and Information Hiding.

UNIT IV

10 Hrs

Regular Expressions: Concept of regular expression, various types of regular expressions, using match function.GUI Programming in Python (using Tkinter/wxPython/Qt): Introduction to GUI library. Layout management, events and bindings, fonts, colours, drawing on canvas (line, oval, rectangle, etc.) Widgets such as : frame, label, button, checkbutton, entry, listbox, message, radiobutton, text, spinbox etc.

UNIT V

10 Hrs

Database connectivity in Python: Installing mysql connector, accessing connector module, using connect, cursor, execute & close functions, reading single & multiple results of query execution, executing different types of statements, executing transactions, understanding exceptions in database connectivity.

References:

1. John V Guttag. “Introduction to Computation and Programming Using Python”, Prentice Hall of India
2. Magnus Lie Hetland, Beginning Python: From Novice to Professional, Apress
3. Paul Gries , Jennifer Campbell, Jason Montojo, Practical Programming: An Introduction to Computer Science Using Python 3, Pragmatic Bookshelf, 2/E
4. A. Lukaszewski, MySQL for Python: Database Access Made Easy, Pact Publisher
5. <http://www.openbookproject.net/thinkcs/python/english2e/>

Additional Reading:



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6. James Payne , Beginning Python: Using Python 2.6 and Python 3, Wiley India,
7. Python Programming, http://en.wikibooks.org/wiki/Python_Programming
8. The Python Tutorial, <http://docs.python.org/release/3.0.1/tutorial/>
9. Learn Python the Hard way, <http://learnpythonthehardway.org/>
10. Swaroop C H. A Byte of Python, <http://www.swaroopch.com/notes/python>

W.e.f. 2019-20 & onwards



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17BCADNFT55: .NET Framework Using C#

Teaching Hours: 4 Hrs/week

**Marks: Main Exam: 80
IA: 20**

Preamble: C# is a very powerful language because it runs within the .NET framework and takes the best features of its predecessors C++ and Java. C# is currently the most used language in the development of third-party apps for Windows. It also is a very popular language on mobile devices, including the Windows Phone.

UNIT I 10 Hrs
Introduction The C# language, The .Net Architecture and .Net Framework, The Common Language Runtime (CLR), Microsoft Intermediate Language (MSIL) Code, Just In Time Compilers (JITers), The Framework Class Library (FCL), The Common Languages Specification (CLS), The Common Type System (CTS), Garbage Collection (GC), The .Net Framework, Working with Visual Studio.Net, Similarities and Differences between C# and C++, Java, and Visual Basic, Understanding the HELLO WORLD Application Code, Namespaces in C#, The using Keyword, The class Keyword, The Main() Method, Printing on the Console, Comments..

UNIT II 10 Hrs
C# Basics: Data Types, Variables & Constants, Operators in C#, Arithmetic Operators, Prefix and Postfix notation, Assignment Operators, Relational Operators, Other Operators, Operators precedence, Flow Control and Conditional Statements.
Object and Classes: Concept of a class, Objects, Fields, Methods, Access modifiers, Properties, Static members of the class, Constructors, Destructors, Method overloading, events and delegates, operator overloading.

UNIT III 10 Hrs
Inheritance, Interface and Polymorphism: Deriving classes, Calling base class constructor, Overriding Methods, Non-Inheritable Classes, Abstract Class, Interface Inheritance, Namespace and Access Modifiers, Boxing and Un-boxing.
Working With Collections: List and Dictionary, ArrayList and HashTable, Generic Classes, Comparable and Sorting, IEnumerable and IEnumerator.

UNIT IV 10 Hrs
Exception Handling: Handling Exceptions using try and catch, Raising Exceptions using throw, Pre-defined Exception classes, Custom Exception classes, Using Statement Working with Components / Assemblies: Creating a Simple .NET Framework Component, Private and Shared Assemblies, Signing Assemblies with Strong Names, DLL Hell, Side-by-side versioning, Deploying .NET Assemblies in Global Assembly Cache.
WinForms: Introduction, Controls, Menus and Context Menus, MenuStrip, ToolStrip, Graphics and GDI, SDI and MDI Applications, Dialogbox (Modal and Modeless), Form Inheritance, Developing Custom, Composite and Extended Controls.

UNIT V 10 Hrs
Windows Services: Purpose and Advantage: Developing and Deploying, Debugging Windows Service, Sending Custom events.
Packaging and Deployment: Compiled Deployment of ASP.NET application, Types of Deployment Modules, Working with a Setup and Web Setup Project, Working with a Merge Module Project, Debugging and Tracing.

References:

1. E. Balagurusamy, Programming in C#, Tata McGraw Hill
2. Stephen Walthert, ASP.NET 3.5 unleashed, SAMS



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3. ShibiPanikkar and Kumar Sanjeev, C# with .NET Frame Work, Firewall Media
4. Jeffrey Richter, Applied Microsoft .Net Framework Programming, (Microsoft)

Additional Reading:

5. <http://www.bestdotnettraining.com>
6. <http://www.bestsharepointtraining.com>
7. <https://stackoverflow.com/documentation>
8. Troelsen, Andrew, Pro C# 5.0 and the .NET 4.5 Framework, 6th Edition, APress, India

W.e.f. 2019-20 & onwards



17BCAAAPP56: Android and Python Lab.

Practical Hours: 4 Hrs/week

Marks: Main exam: 80

IA: 20

Android

1. Creating a "Hello, Android" Android Application (description available on the official developer website of Android: <http://developer.android.com>)
2. Creating an application with multiple activities and a simple menu using listview (<https://sites.google.com/site/hkustcomp4521/home/lab-exercises>)
3. Develop the android mobile application which consists of GUI components for Login Page creation.
4. Develop an application to illustrate using of images and colors.
5. Develop an application to illustrate WebView
6. Illustrate using of audio functions in Android
7. Write an application that draws basic graphical primitives on the screen.

Python

1. Program related to string manipulation
2. Program related to dictionaries
3. Programs using list comprehensions and anonymous functions
4. Programs using the built-in methods of the string, list and dictionary classes
5. Programs with iterables and iterators.
6. Program to demonstrate exception handling.
7. Program to demonstrate the use of regular expressions.
8. Program to show draw shapes & GUI controls.
9. Program to create server-client and exchange basic information



17BCADNLP57: C# Lab.

Practical Hours: 4 Hrs/week

Marks: Main exam: 80

IA: 20

1. Write a C# Sharp program to calculate root of Quadratic Equation
2. Write a program in C# Sharp to count the frequency of each element of an array
3. Write a program in C# Sharp to count a total number of alphabets, digits and special characters in a string
4. Write a program in C# Sharp to create a function to calculate the sum of the individual digits of a given number.
5. Create an application that allows the user to enter a number in the textbox named 'getnum'. Check whether the number in the textbox 'getnum' is palindrome or not. Print the message accordingly in the label control named lbldisplay when the user clicks on the button 'check'.
6. Write a C# program to balance a checkbook. The program needs to get the initial balance, the amounts of deposits, and the amounts of checks. Allow the user to process as many transactions as desired; use separate functions to handle deposits and checks
7. Draw a square with sides 100 pixels in length. Then inscribe a circle of radius 50 inside the square. Position the square and the inscribed circle in the middle of the screen.
8. Write a program that inputs the coordinates of three mouse clicks from the user and then draws a triangle in the output window using those three points.
9. Write a program to implement multilevel inheritance.
10. C# Program to Demonstrate IList Interface.
11. Write a Program to display the selected date in the calendar.
12. Write a Program to insert the data in to database using Execute-Non Query.
13. Write a Program to display the Contact Number of an author using database
14. Create an application which will ask the user to input his name and a message, display the two items concatenated in a label, and change the format of the label using radio buttons and check boxes for selection, the user can make the label text bold ,underlined or italic and change its color . include buttons to display the message in the label, clear the text boxes and label and exit.
15. List of employees is available in listbox. Write an application to add selected or all records from listbox (assume multi-line property of textbox is true).



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17BCACLCT61	Cloud Computing	4	4	3	80	20	100
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17BCABINT63	Business Intelligence	4	4	3	80	20	100
17BCAWPLP64	Web Programming Lab.	--	4	3	80	20	100
17BCAPADP65	Project- Application Development	--	9	3	240	60	300



17BCACLCT61: Cloud Computing

Teaching Hours: 4 Hrs/week

**Marks: Main Exam: 80
IA: 20**

UNIT I 10 Hrs
Cloud Computing Basics: Cloud Computing Overview, applications, Intranets and the Cloud, Why Cloud Computing Matters, benefits, limitations, Companies in the Cloud today, Cloud services.

UNIT II 10 Hrs
Cloud Computing Technology: Hardware and Infrastructure, clients, security, network, services, accessing the Cloud , Platform, Web Applications, Web APIs, web browsers, Cloud Storage – Overview, Cloud Storage Providers, standards, Application, Client, Infrastructure, Service.

UNIT III 10 Hrs
Cloud Computing At Work: Software as a service – Overview, driving forces, Company offerings, Industries, Software plus Services – Overview, Mobile Device Integration –Providers, Microsoft Online.

UNIT IV 10 Hrs
Developing Applications: Google, Microsoft, Intuit Quick Base, Cast Iron Cloud, Bungee Connect, Local clouds and Thin Clients, Virtualization, Server Solutions, Thin Clients.

UNIT V 10 Hrs
Migrating to the Cloud: Cloud Services for Individuals, Cloud services aimed at the mid, market – Enterprise, Class Cloud Offerings, Migration.

References:

1. Velte T. Antony, Velte J. Toby. and Elsen Peter Robert, Cloud Computing: A Practical Approach, Tata McGraw- Hill
2. Miller Michael, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing.
3. Beard Haley, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, EmereoPvt. Limited.
4. Mark I. Williams, A Quick Start Guide to Cloud Computing: Moving Your Business into the Cloud, Kogan Page, Great Britan

Additional Reading:

5. Gautam Shroff, Enterprise Cloud Computing Technology Architecture Applications, Cambridge University Press
6. Toby Velte, Anthony Velte, Robert Elsenpeter, Cloud Computing, A Practical Approach McGraw-Hill Osborne Media;
7. Chris Hay, Brian Prince, “Azure in Action” Manning Publications



17BCAWDPT62: Web Designing and Programming

Teaching Hours: 4 Hrs/week

Marks: Main Exam: 80

IA: 20

UNIT I **08 Hrs**

The World Wide Web: Introduction to world wide Web, Web Pages and Contents, Web Clients, Web Servers, Web Applications, Websites – Home Pages: Web Site Development ; How to Builds Web Sites? , Web Content Authoring, Web Graphics Design, Web Programming.What is a scripting language? Motivation for and applications of scripting, How scripting languages differ from non-scripting languages, Types of scripting languages.

UNIT II **10 Hrs**

Web Design:

Origins and evolution of HTML and XHTML, Basic syntax, Standard XHTML document structure, Basic text markup, Images, Hypertext Links, Lists, Tables, Forms, Frames, Syntactic differences between HTML and XHTML.Overview and features of HTML5.

CSS: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, The and <div> tags, Conflict resolution.Overview and features of CSS3.

UNIT III **10 Hrs**

JavaScript: Object orientation and JavaScript; General syntactic characteristics; Primitives, operations, and expressions; Screen output and keyboard input; Control statements; Object creation and modification; Arrays; Functions; Constructor; Pattern matching using regular expressions; Errors in scripts; Examples.

UNIT IV **12 Hrs**

Java Script and HTML Documents, Dynamic Documents with JavaScript. The Document Object Model; Element access in JavaScript; Events and event handling; Handling events from the Body elements, Button elements, Text box and Password elements; The DOM 2 event model; The navigator object; DOM tree traversal and modification. Introduction to dynamic documents; Positioning elements; Moving elements; Element visibility; Changing colors and fonts; Dynamic content; Stacking elements; Locating the mouse cursor; Reacting to a mouse click; Slow movement of elements; Dragging and dropping elements.

XML: Introduction to XML, Anatomy of an XML, document, Creating XML Documents, Creating XML DTDs, XML Schemas, XSL, XML processors, Web services.

UNIT V **10 Hrs**

PHP : Why PHP and MySQL?, Server-side web scripting, Installing PHP, Adding PHP to HTML, Syntax and Variables, Passing information between pages, Strings, Arrays and Array Functions, Numbers, Basic PHP errors / problems. PHP/MySQL Functions, Displaying queries in tables, Building Forms from queries, String and Regular Expressions, Sessions, Cookies and HTTP, Type and Type Conversions.

References:

1. Thomas Powell, Web Design The complete Reference, Tata McGrawHill
2. Thomas Powell, HTML and XHTML The complete Reference, Tata McGrawHill
3. Thomas Powell and Fritz Schneider, JavaScript 2.0 : The Complete Reference, Second Edition, Tata McGrawHill
4. PHP for the Web: Visual Quick Start Guide, 4th Edition, Peachpit Press
5. Beginning PHP 5.3 (Wrox, free ebook: <http://it-ebooks.info/book/713/>)



Additional Reading:

6. Steven M. Schafer, HTML, CSS, JavaScript, Perl, Python and PHP - Web standards Programmer's Reference, Wiley Publishing, Inc..
7. Thomas A. Powell, The Complete Reference HTML & XHTML, Tata McGraw Hill.
8. Learn To Build With PHP: A Crash Course (free ebook: <http://www.makeuseof.com/pages/learnbuild-php-crash-course>)
9. <https://stackoverflow.com/documentation>
10. W3Schools: PHP (<http://www.w3schools.com/php/>)
11. PHP Language Reference (<http://php.net/manual/en/langref.php>)
12. W3Schools: JavaScript(<https://www.w3schools.com/js/default.asp>)



17BCAECOT63: Business Intelligence

Teaching Hours: 4 Hrs/week

Marks: Main Exam: 50

IA: 20

Unit I: Business View of Information Technology applications: Business Enterprise Organization , Its functions, and core business process, Baldrige business excellence frame work (Optional reading) Key purpose of using IT in business, The connected world : Characteristics of Internet _Ready IT Applications, Enterprise applications(ERP/CRM) and bespoke IT applications, information users and their requirements, Types of digital data , structured data , unstructured data, Semi-structured data , Difference between semi structured and structured data. 10 Hrs

Unit II: Introduction to OLTP and OLAP : OLTP(online transaction processing) OLAP(online Analytical Processing) Different OLAP Architectures , OLTP and OLAP, Data models for OLTP and OLAP, Role of OLAP tools in the BI Architecture , should OLAP be performed directly on operational data bases. Business intelligence: Using analytical information of decision support, Information sources before dawn of BI , BI defined , evolution of BI and role of DSS , EIS, MIS and digital dash boards, Need for BI at virtually all levels , BI for past , present and future, The BI value Chain , Introduction to Business analytics. 08 Hrs

Unit III:BI definitions and concepts : BI component Framework , BI Users, Business Intelligence Applications, BI roles and responsibilities, Basics of data integration , Need for data Warehouse ,Definition of data Warehouse, ODS, Ralph Kimball's Approach vs Inmon's Approach , Goals of data warehouse, Constituents of data Warehouse , Data integration, Data integration technologies , Data Quality , Data Profiling, A case Study from the Healthcare Domain. 10 Hrs

Unit IV:Types of Data Model: Data Modelling techniques, Fact table, Dimension table, Typical dimensional Models, Dimensional Modelling Life cycle, Understanding Measures and performance measurement System terminology , navigating a Business Enterprise. 10 Hrs

Unit V:Basics of Enterprise Reporting: Reporting perspectives common to all levels of Enterprise, Report Standardization and Presentation practices, Enterprise Reporting characteristics in OLAP World , Balanced score card , Dash boards. 10 Hrs

Text Books:

1. R.N.Prasad, Seema Acharya , Fundamentals of Business analytics, First Edition , 2011, Wiley-India

Reference Books:

1. GaliShmueli, Nitin R Patel , peter C . Bruce, " Data mining for Business Intelligence" Wiley-India, 2011.
2. Ralph Kimball ,Margy Ross, "Practical tools for Data Warehousing and Business Intelligence" , second Edition Wiley-India 2011.



17BCAWDPP64: Web Designing and Programming Lab.

Practical Hours: 4 Hrs/week

Marks: Main exam: 80

IA: 20

1. Write a HTML code to demonstrate various formatting tags, ordered and unordered list, and table using frames suitably.
2. Write HTML/Java scripts to display your CV in navigator, your Institute website, Department Website and Tutorial website for specific subject.
3. Develop and demonstrate a XHTML document that illustrates the use external style sheet, ordered list, table, borders, padding, color, and the tag.
4. Create a HTML form containing Textboxes to enter name of student, roll number, course, and grade obtained. When the form runs in the Browser fill the textboxes with data. Write JavaScript code that verifies that all textboxes has been filled. If a textboxes has been left empty, popup an alert indicating which textbox has been left empty.
5. Develop and demonstrate a XHTML file that includes JavaScript script for receiving a number n as input and outputting first n Fibonacci numbers..
6. Write a JavaScript code to compute the sum of n natural numbers.
7. Create a HTML form containing textbox to enter text. Write a JavaScript code block, which checks the contents entered in a form's Text element. If the text entered is in the lower case, convert to upper case. Make use of function to Uppercase (.).
8. Design an XML document to store information about an Employee viz. Name, EmpId, Job, Department and position. Make up sample data for 3 employees. Create a CSS style sheet and use it to display the document
9. Create a XHTML form with Name, Address Line 1, Address Line 2, and E-mail text fields. On submitting, store the values in MySQL table. Retrieve and display the data based on Name.
10. Write a small password checking script. This will record the username, old password and new password. The rules are that a password is OK if it is >7 characters long, contains some uppercase characters and is different to the old password. The admin user (username 'admin') can do whatever they like. Print out whether the new password is OK.
11. Write a PHP program to store current date-time in a COOKIE and display the "Last visited on" date-time on the web page upon reopening of the same page.
12. Write a PHP program to store page views count in SESSION, to increment the count on each refresh, and to show the count on web page.
13. Using PHP and MySQL, develop a program to accept book information viz. Accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search results with proper headings.
14. Mini Project: Prepare your own E-commerce business site.



17BCAPADP65: Project-Application Development	
Practical Hours: 4 Hrs/week	Marks: Main exam: 80 IA: 20

The objective of the BCA project work is to develop a quality software solution by following the software engineering principles and practices. During the development of the project the students should involve in all the stages of the software development life cycle (SDLC).

This Lab. will enable students to demonstrate their practical and theoretical skills gained during five semesters of study in BCA Programme.

- The students are required to carry out the project in a group of two or three students under the guidance of course teacher.
- Project work problem statement shall be identified by the students with the help of the course teachers and students shall submit the synopsis/project proposal of the same during the second week of the commencement of VI semester BCA course.
- During project development students are expected to define a project problem, do requirements analysis, systems design, software development, apply testing strategies and do documentation with an overall emphasis on the development of a robust, efficient and reliable software systems.
- No change in the title of the project work shall be allowed after 3rd week of the commencement of VI semester BCA course.
- The project development process has to be consistent and should follow standards identified by the guide monitoring the project work.
- There is no restriction on use of hardwares and softwares for carrying out the project work except that ready application packages are not allowed.
- The students have to submit the project dissertation of the project work carried out in one hard copy along with soft copy written on compact disc.

Project Dissertation Details:

- The standard procedure for documenting the project work shall be followed. However, while writing is in progress, students should show each chapter to their supervisors for necessary feedback especially on technical content. Note that the quality of the dissertation is more important than its number of pages.
- The dissertation text (defined as everything except title page, table of contents, references and appendices) should be around 50 A4 pages. The length (dissertation text together with appendices) of the dissertation should be less than 100 pages).
- The students are advised to follow the following typing recommendations

Description	Draft Report	Hard Bound
dissertation text Times New Roman	12pt	12pt
text in tables and code listing	11pt	11pt
line spacing (preface and main text)	1.5	1.5
line spacing appendices	1.0	1.0
left margin	37mm	37mm
top/bottom/right margins	25mm	25mm
chapter heading	24pt bold	24pt bold
section headings	16pt	16pt
subsection headings	14pt	14pt
other headings	12pt bold	12pt bold
tables headings font	11pt bold	11pt bold
printing	on both sides of paper use mirror image option	Single sides of paper

Contents of the dissertation



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- Preface: Title page, certificate, student declaration page, abstract, acknowledgement page, contents, list of figures, list of tables, and list of acronyms.
- Main chapters
 - Introduction: The motivation for the project should be argued here. Then a brief introduction to the project should be provided indicating its objectives and scope. Finally, a paragraph containing an outline of the remaining chapters (starting with Chapter 2) is recommended.
 - Analysis: information on the existing system should be provided-The students can incorporate different types of diagrams to describe the processes and functionalities of the existing system. The candidate should review software of the proposed system. An analysis of the requirements should also be provided in this chapter. For example, the requirements of the system could be listed. A specification of the number of users, the frequency of use, and the jobs of the users could be provided. Functional requirements covering system functionality expected by the users should be addressed. Include a section to the end of the analysis chapter to describe the selected methodology.
 - Design: In this chapter the student should consider different competing design strategies (alternative solutions) for his system. The different strategies may involve the way of development (developing from scratch, using open-source components, etc.), the development platform (stand-alone personal computer, client-server environment, etc.), choice of system software (Windows, Linux, etc.). The candidate should compare how the project requirements are satisfied through each alternative. The design of the proposed system should be another major section of this chapter. the candidate should describe the design of the system referring to different types of diagrams/models; for example, if non-object oriented methodology has been selected then include use case diagrams, use case narratives, activity diagrams, and entity relationship diagrams, and if object oriented methodology has been selected then include use case diagrams and use case narratives, class diagrams, sequence diagrams. User interface design is the next major section of this chapter. The candidates should describe the design considerations for designing user interfaces of the system and justify the design decisions that were made. Layouts of relevant interfaces should be included in order to clarify the design decisions taken.
 - Implementation: This chapter should describe the implementation of the system. For example, it should identify and explain all major code and module structures. Include a diagram to depict and describe the interaction between modules of the system. Also, the implementation environment (hardware and software), any existing code that was reused by the candidate, development tools used, and any platform dependence must be discussed. Appropriate technical documentation may be included as appendices to the dissertation if they are expected to be useful for the reader. Note that a list of selected code will appear in appendix and the code used in this chapter should be presented for the purpose of explaining the implementation aspects of selected important code. This code should be presented as a code segment.
 - Evaluation: A comprehensive test plan that was used to verify and validate the system should be provided. Evidence should be provided of using a wide range of test data. Evidence should be produced to show that all aspects of the system have been tested and specification has been met. Description of the effects of various kinds of errors and the required system behaviour upon occurrence of an error should be included. The candidate should report the test results in text in a table in this chapter and include detailed actual test results (in screen shots) in an appendix of the dissertation.



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- Conclusion: This chapter will conclude the dissertation with a critical evaluation of the system and suggestions for any future work. The evaluation should include a critical discussion and assessment of results of project. This chapter should also identify any deficiencies in the final product and highlight how improvements could be made
- References: The details of the references are provided in References section of the dissertation. You should include any web links too.
- Appendices: - System Documentation-Provide program installation, compilation and execution details.; Design Documentation- Any design documentation that is not critical to be included in the main text (Chapter 3) but could still be of interest to a reader can be added to the appendices. These could be for example design diagrams (e.g., data flow, entity relationship, database schema and UML) that have not been included in the main text; User Documentation-User documentation may cover all aspects of the system, with appropriate screen shots and explanations; Management Reports- In addition to producing day to day transaction reports (e.g. a payroll system should produce an individual pay sheet, coin analysis to make cash payments, EPF report etc.) a system must produce summarised reports for the management (e.g. monthly, quarterly payments made by organisation, employees, overtime hours by employee, etc.). These reports will be included here; - Code Listing; Glossary and Index

Note: Project guidelines shall be notified by the Department at the end of V semester BCA course. The documentation guideline to document the project work in the form of dissertation shall be notified to the students well in advance during VI semester BCA course.

Internal Assessment evaluation:

Total Marks: 60

First Internal Assessment

Max.Marks: 30

Time: 20 mnts

Students shall present the details of the project work carried out that includes the following

- Synopsis contents
- Problem identification and proposed solution
- SAD, SRS
- Database Design
- Functions

PowerPoint slides shall be used by the students to present the work carried out.

Second Internal Assessment

Max. Marks: 30

Time: 30mnts

Students shall present the details of the project work carried out that includes the following

- Coding details
- Forms and reports
- Demo of the application developed

Note: IA marks shall be assigned by the concerned guide monitoring the project work of the students.

Project Evaluation: Main Examination

| BCA revised Syllabus w.e.f. 2019-20 and onwards



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Max. Marks: 240

Time: 3 Hours

1. Dissertation/Project Report evaluation : **100**
2. Presentation/Demo of the application developed : **100**
(navigation of the application, features incorporated, data validation, UI, reports, etc.)
3. Viva-voce : **40**

W.e.f. 2019-20 & onwards



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Theory Paper Evaluation Scheme

(i) Internal Test– 20 Marks:

Test: 14 marks

Attendance: 03 marks

Seminar/assignment: 03 marks

Two tests shall be conducted, one during the mid of the semester and another at the end of the semester for 1hour 15 mnts duration each.

First IA Marks: 20 weightage: 06

Second IA Marks: 20 weightage: 08

Teachers are encouraged to conduct the test either using any open source learning management system such as Moodle (Modular object-oriented dynamic learning environment) Or a test based on an equivalent online course on the contents of the concerned course(subject) offered by or build using MOOC (Massive Open Online Course) platform.

Note: Guidelines given by the University from time-to-time shall be followed for IA.

(ii) Examination-

Max Marks: 80

Duration - 3 Hours.

Theory question paper pattern:-		Remarks
Questions	Marks	
SECTION A Q1. Answer all the questions 10 sub questions (a-j)	2 x 10 =20	ability to write short answers upto 150 words
SECTION B Q2. through Q6: Answer any four questions	4 x 5=20	ability to write answers upto 500 word
SECTION C Q7. through Q11: Answer any four questions	4 x 10=40	ability to write descriptive answers

Note: For Section-B, one question from each unit shall be considered. For Section-C, one question from each unit shall be considered.



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Programming Lab. i.e. Practical Evaluation Scheme (Except project work)

(i) Internal Test– 20 Marks:

Test: 14 marks

Attendance: 03 marks

Seminar/assignment: 03 marks

Two tests shall be conducted, each of 14 marks, and average of the two shall be considered as final.

Duration of IA test: 1 hr.

Students shall design and implement the programs/assignments given from the set of assignments provided at the beginning of the course commencement.

Course teacher are encouraged to test the students by giving the students problems from the course topic other than the set of assignments given to strengthen student's ability in problem solving

Note: Guidelines given by the University from time-to-time shall be followed for IA.

ii) Practical Examination- 80 Marks Duration - 3 Hours.

Certified Journal is compulsory for appearing Practical Examination

Students shall be given two programming assignments taking into consideration of duration of the time allotted to students for writing, typing and executing the programs.

Algorithm/Program design : 30

Execution : 30 (includes program code correctness and correct

execution results)

Journal : 10

Viva-Voce : 10