File Ref.No.72742/GA - IV - J1/2014/Admn

UNIVERSITY OF CALICUT

Abstract

BVoc programme in Software Technology – under Modified BVoc Regulations 2014 – Scheme and Syllabus - implemented w.e.f 2014 admission onwards - Orders issued

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G & A - IV - J

U.O.No. 4167/2015/Admn Dated, Calicut University.P.O, 24.04.2015

Read:-1) Minutes of the meeting of the pricipals of the colleges got permission to start BVoc programmes and Community College programme held on 19.06.14

2) Minutes of the combined meeting for the approval of BVoc Syllabus

3) BVoc Regulaitons implemented as per U.O.No. 9809/2014/Admn Dtd 23.10.2014

4) Minutes of the Faculty of Science 22.12.14

5) The minutes of the meeting of Academic Council held on 15.01..2015

6) Modified BVoc Regulaitons U.O.No. 2650/2015/Admn Dtd :17.03.2015

7) Corrected syllabus forwarded by the Chairman, Computer Science PG

8) Orders of Vice Chancellor in the File No: 141170/GA - IV -J1/2014/Admn on 16.02.15

ORDER

As per the paper read as (1) above the Draft Regulations for BVoc Programmes have been prepared. As per paper read as (2) the syllabus fo BVoc in Software Technology has been approved. As per paper read as (3) The BVoc Regulations have been implemented.

As per the paper read as (4) the Minutes of the Combined Meeting for the approval of BVoc Syllabi have been approved by the Faculty of Science. As per paper read as (5) the Academic council has approved the decisions of Faculty of Science. As per paper read as (6) the Bvoc Regulations have been finalised and implemented. Minor corrections have been made in the approved syllabus in tune with the modified regulations and as per paper read as (7) the Chairman, BOS in Computer Science PG has forwarded the corrected Syllabus.

As per paper read as (8) the Vice Chancellor has approved to implement the decision of the Academic Council. Sanction has, therefore, been accorded for the implementation of the Scheme and Syllabus of BVoc programme in Software Technology under BVoc Regulations 2014, in the University, w.e.f 2014 Admissions.

Orders are issued accordingly.

(The syllabus is available in the website: universityofcalicut.info)

Usha K

Deputy Registrar

To

Forwarded / By Order

Section Officer

Syllabus Summary

B.Voc in Software Technologies

Semester	C. NO	Course Code	Title	Hours	Credit	Marks		
						Internal	External	Total
Semester I	**1.1**	**GEC1EG01**	**(A01)** The Four Skills For Communication	4	4	20	80	100
	1.2	 **GEC1ML02** **GEC1AR02**	**(A07)** Communication Skill in Languages other than English **(A07)** Sargathmaka Rachanayum Ashaya Vinimaya Sheshiyum **(A07)** Communication Skill in Arabic	4	4	20	80	100
	1.3	**GEC1MT03**	Mathematical Foundation of Computer Science	4	4	20	80	100
	1.4	**SDC1ST01**	Introduction to Computer Science & Programming	4	4	20	80	100
	1.5	**SDC1ST02**	Introduction to Web Technologies and Design Tools	4	4	20	80	100
	1.6	**SDC1ST03**	Object Oriented Programming in Java	4	5	20	80	100
	1.7	**SDC1ST04**	Lab1: Web Technologies & Object Oriented Programming in Java	6	5	20	80	100
Semester II	**2.1**	**GEC2EG04**	**(A02)** Modern Prose And Drama	5	4	20	80	100
	2.2	 **GEC2ML05** **GEC2AR05**	**(A09)** Literature in Language other than English **(A09)** Malayala Sahithyapadanam **(A09)** Literature in Arabic	4	4	20	80	100
	2.3	**GEC2NM06**	**(A11)** Basic Numerical Skills	4	4	20	80	100
	2.4	**SDC2ST05**	Database Management System	4	4	20	80	100
	2.5	**SDC2ST06**	Web Technologies, PHP and MySQL	4	4	20	80	100
	2.6	**SDC2ST07**	Lab2: PHP and MySQL	4	5	20	80	100
	2.7	**SDC2ST08**	Mini-Project1	5	5	20	80	100

Semester III	**3.1**	**GEC3EG07**	**(A03)** Inspiring Expressions	4	4	20	80	100
	3.2	**GEC3TW08**	Technical Writing	4	4	20	80	100
	3.3	**GEC3GI09**	**(A12)** General Informatics	5	4	20	80	100
	3.4	**SDC3ST09**	ASP.NET Programming	4	4	20	80	100
	3.5	**SDC3ST10**	Software Engineering	4	5	20	80	100
	3.6	**SDC3ST11**	Lab3: ASP.NET Programming	5	5	20	80	100
	3.7	**SDC3ST12**	Elective **SDC3ST12(1)** User Interface Design **SDC3ST12(2)** Search Engine Optimization	4	4	20	80	100
Semester IV	**4.1**	**GEC4EG10**	**(A04)** Readings on Society	5	4	20	80	100
	4.2	**GEC4BM11**	**(A14)** Basics of Audio & Video Media	4	4	20	80	100
	4.3	**GEC4ED12**	**(A13)** Entrepreneurship	4	4	20	80	100
	4.4	**SDC4ST13**	Introduction to Computer Networks	4	4	20	80	100
	4.5	**SDC4ST14**	Software Testing Tools	4	4	20	80	100
	4.6	**SDC4ST15**	Lab4: Software Testing	4	5	20	80	100
	4.7	**SDC4ST16**	Mini-Project2	5	5	20	80	100
Semester V	**5.1**	**GEC5BC13**	Business Communication	4	4	20	80	100
	5.2	**GEC5SM14**	Software Project Management	4	4	20	80	100
	5.3	**SDC5ST17**	PHP Frameworks: CakePHP and CodeIgniter	4	4	20	80	100
	5.4	**SDC5ST18**	Programming in Mobile Devices- Android	4	4	20	80	100
	5.5	**SDC5ST19**	Data Structure Using Java	4	4	20	80	100
	5.6	**SDC5ST20**	Lab5: Programming in Mobile Devices	5	5	20	80	100
	5.7	**SDC5ST21**	Lab6: Data Structure Using Java & PHP frameworks	5	5	20	80	100
Semester VI	**6.1**	**SDC6ST22**	Main Project	900	30	20	80	100

Core Papers

Semester 1

SDC1ST01 Introduction to Computer Science & Programming

Hours: 4 **Credit: 4**

Module I

Introduction to Computer Science, History and Generations of Computer, Different Types of Computer. Digital Logic Circuit, Logic Gates, Boolean algebra, Combinational Circuit, Half adder, Full Adder, Half Subtractor, Full Subtractor.

Module II

Digital Components, IC, Memory Unit, Types of Memories and their Characteristics, Memory Hierarchy, Main Memory, Auxiliary Memory, Cache Memory, Virtual Memory. I/O Devices and their Functions.

Module III

Data Representation, Number Systems, Computer Codes, Signed and Unsigned Numbers, 1s Complement and 2s Complement, Fixed Point Representation, Floating-Point Representation, Other Binary Codes.

Module IV

Different Type of Software: System and Application Software, Utility Software, Open Source Concept. Operating System Concept- Need and Functions of Operating System, Types of Operating System, Batch Processing Operating System, Multiprogramming Operating System, Real Time Operating System, Network and Distributed Operating System, Web OS, Examples of OS and their Features.

Module V

Problem Solving Techniques, Steps for Problem Solving, Using Computer as a Problem Solving Tool, Design of Algorithms, Definition and Features of Algorithm, Criteria to be followed by an Algorithm, Top Down Design, Analysis of Algorithm Efficiency, Analysis of Algorithm Complexity, Flowcharts, Basic Symbols Used in Flowchart.

References:

1. Computer System Architecture. M Morris Mano, Pearson Education.
2. Computer System Architecture, PVS Rao, PHI 2009

3. Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford stein. Third Edition. PHI

SDC1ST02 Introduction to Web Technologies and Design Tools

Hours: 4 **Credit: 4**

Module I

What is HTML, Introduction to HTML, General Structure of an HTML page, Basic Tags in HTML, Formatting tags, working with Images, Headings, New tags in HTML5.

Module II

Links, Anchor tag, Lists, Unordered Lists, Ordered Lists, Definition Lists, Tables, Frames, Frameset, Forms, FORM and INPUT tag, Text Box, Radio Button, Checkbox, SELECT tag and Pull Down Lists, Hidden, Submit and Reset, video audio and other multimedia, Other form Controls, HTML validator.

Module III

CSS: Inline Styles, Embedded Style Sheets, Linking External Style Sheets, Style Specification Formats Selector Forms, Color, Property Value Forms, Font Properties, List Properties, Alignment of Text, the Box Model, Background Image, The and Tags

Module IV

JavaScript Variables and Data Types, Declaring Variables, Data Types, Statements and Operators, Control Structures, Conditional Statements, Loop Statements, Functions, Message box in JavaScript, Dialog Boxes, Alert Boxes, Confirm Boxes, Prompt Boxes, JavaScript with HTML, Events, Event Handlers, Forms.

Module V

Dreamweaver : Exploring Dreamweaver Interface, Planning & Setting Web Site Structure, Working with panels, Understanding and switching views, Using property inspector, Formatting text, Creating Web pages, Hyperlinking pages, External Linking, Anchor, Inserting Tables, Working with images, Understanding, Creating rollover images Working with forms, Validating forms, Creating Tabbed Panel, Creating Collapsible panel, Using Behaviors , Creating interactive website.

References:

1. The Definitive Guide to HTML5, Adam Freeman, Apress
2. Beginning HTML5 and CSS3, Christopher Murphy, Richard Clark, Oli Studhoime, Manian, Apress
3. JavaScript: The Definitive Guide, David Flanagan, O'Reilly.

4. Adobe Dreamweaver CS6 Classroom in a Book, Adobe Creative Team, Adobe Press
5. Adobe Dreamweaver CS6 Revealed, Sherry Bishop,

SDC1ST03 Object Oriented Programming in Java

Hours: 4 **Credits: 5**

Module I

OOPS Concepts: Class, Objects, Comparison with procedure oriented programming, Features: Abstraction, Encapsulation, Polymorphism, Inheritance, Message Passing, UML Representations

Module II

Introduction to Programming in Java: Features of java, Unicode, Data Types, Variables, Operators, keywords, Methods, Conditionals Loops, Arrays: One dimensional, multidimensional arrays.

Module III

Class Fundamentals, Creating objects, Assigning object reference variables, Introducing Methods, Static methods, Constructors, Overloading constructors, This Keyword, Using Objects as Parameters, Argument passing, Returning objects, Method Overloading, Garbage Collection, The Finalize ( ) Method

Module IV

Inheritance: Types, Advantages, keyword super, Method Overriding, Abstract Classes, Polymorphism, Final Keyword, Interfaces, Packages ,Defining Package, CLASSPATH. Exceptions: try, throw, throws, catch, finally, user defined exceptions, Built in exceptions

Module V

Multithreading: An Introduction, The Main Thread, Java Thread Model, Thread Priorities, Synchronization in Java, Inter threads Communication. Java I/O Classes and Interfaces, I/O Stream Classes, Input and Output Stream, Input Stream and Output Stream Hierarchy.

References:

1. Java Complete Reference, Herbert Schildt, Tata MCGraw hill edition
2. J2EE Complete Reference, Jim Keogh, Tata MC Graw hill edition.3. Object Oriented Design with UML and Java, Kenneth Barclay, John Savage, Elsevier.

GEC1MT03 Mathematical Foundation of Computer Science

Hours: 4 **Credits: 4**

Module I

Set, Basic Definitions - Venn Diagrams and set operations - Laws of set theory - Principle of inclusion and exclusion - partitions- Permutation and Combination - Relations- Properties of relations - Matrices of relations - Closure operations on relations - Functions - injective, surjective and bijective functions.

Module II

Matrices, Rank of Matrix, Solving System of Equations-Eigen Values and Eigen Vectors- Inverse of a Matrix.

Module III

Propositions and logical operators - Truth table - Propositions generated by a set, Equivalence and implication - Basic laws- Some more connectives – Functionally complete set of connectives- Normal forms - Proofs in Propositional calculus – Predicate calculus.

Module IV

Languages and Grammars-Phrase Structure Grammar-Classification of Grammars- Pumping Lemma for Regular Languages-Context Free Languages.

Module V

Finite State Automata-Deterministic Finite State Automata(DFA), Non Deterministic Finite State Automata (NFA)-Equivalence of DFA and NFA-Equivalence of NFA and Regular Languages.

Reference:

1. Kenneth H.Rosen, " Discrete Mathematics and Its Applications", Tata McGraw Hill, Fourth Edition, 2002 (Unit 1,2 & 3).

2. Hopcroft and Ullman, "Introduction to Automata Theory, Languages and Computation", Narosa Publishing House, Delhi, 2002. (Unit 4,5)

3. A.Tamilarasi & A.M.Natarajan, "Discrete Mathematics and its Application", Khanna Publishers, 2nd Edition 2005.

4. M.K.Venkataraman "Engineering Mathematics", Volume II, National Publishing Company, 2nd Edition,1989.

SDC1ST04 Lab1: Web Technologies and Object Oriented Programming in Java

Hours: 6 **Credits: 5**

Objectives:

This lab course involves the development of the practical skills in Java and HTML

Sample List of Java Programs (*Minimum five programs from each unit)*

- Write a Java program to multiply two given matrices.
- Write a Java program that checks whether a given string is a palindrome or not.
- Write a Java program for sorting a given list of names in ascending order.
- Write a Java program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.
- Write a java program to create an abstract class named Shape that contains an empty method namednumberOfSides ( ).Provide three classes named Trapezoid, Triangle and Hexagon such that each one of theclasses extends the class Shape. Each one of the classes contains only the method numberOfSides ( ) that shows the number of sides in the given geometrical figures.
- Write a program to perform inheritance.
- Write a program to perform method overriding.
- Write a program using packages.
- Write a program to handle exceptions.
- Find the sum of two complex numbers using object passing.
- Write program to print prime numbers in a given range.
- Write program to print strange numbers in a given range.
- Write program to print natural numbers in a given range.
- Write program to print prime numbers in a given range.
- Write program to create user defined exceptions.

Sample Lab exercise for HTML

- Basic of HTML: How to Create HTML Document, Steps for Creating a Simple HTML Program
- Creating HTML table
- Unordered list
- Ordered list
- Definition list
- Script Basics, Incorporating JavaScript into a Web Page
- Working with Dreamweaver, Creating and Saving files
- Inserting Scripts in Dreamweaver files
- Inserting External Media in the Web Page
- Creating HTML forms
- Adding CSS Style to your Page
- Web page using frames

Semester II

SDC2ST05 Database Management System

Hours: 4 **Credits: 4**

Module I

Database - Overview of database management system, limitations of data processing environment, database approach, data independence, three level of abstraction, DBMS structure. DBMS Models: Network, ER, Hierarchical, Relational,
Entity Relation Model - Entity, attributes, keys, relations, cardinality, participation, weak entities, ER diagram, Generalization, Specialization and aggregation, conceptual design with ER model, entity versus attribute, entity versus relationship, binary versus ternary relationship, aggregate versus ternary relationship.

Module II

Relational Model - Introduction to relational model, Domains, Attributes, Tuple and Relation, Super keys Candidate keys and Primary keys for the Relations, Relational Constraints, Domain Constraint, Key Constraint, Integrity Constraint, Update Operations and Dealing with Constraint Violation,

Module III

Database Integrity and Normalisation - Relational Database Integrity, The Keys, Referential Integrity, Entity Integrity, Redundancy and Associated Problems, Functional Dependencies, Normalisation - The First Normal Form, The Second Normal Form, The Third Normal Form, Boyce Codd Normal Form, Desirable Properties of Decomposition

Module IV

Query Languages - Relational Algebra - select and projection, Set operations like union, intersection, difference, cross product, Joins, division. Database Languages:DDL, DML, DCL. SQL.

Module V

Introduction to transaction management: ACID Properties, states of transaction.
Familiarization with: Views, Stored Procedure and Trigger.

References:

1. Database Management Systems- Ramakrishnam, Gehrke , McGraw- Hill.
2. SQL, PL/SQL The Programming language of Oracle- Bayross, B.P.B. Publications.
3. Professional SQL server 2000 Programming – Rob Vieira, Wrox Press Ltd, Shroff.

Additional References:

1. SQL server 2000 black book- Patrick Dalton and Paul Whitehead, Dreamtech Press.
2. *Elsmasri and Navathe, "Fundamentals of Database Systems", Pearson Education.*
3. Peter Rob and Coronel, *"Database Systems, Design, Implementation and Management", Thomson Learning*
4. C.J.Date, Longman, "Introduction to database Systems", *Pearson Education.*
5. Jeffrey D. Ullman, Jennifer Widom, "A First Course in Database Systems", Pearson Education.
6. Martin Gruber, "Understanding SQL",B.P.B. Publications.

SDC2ST06 Web Technologies, PHP and MySQL

Hours: 4 **Credit: 4**

Module I

XML Basics, XML Document Structure, XML Namespaces, Document Type Definitions, XML Schemas, Displaying XML Documents, reading from XML, Writing to XML, Populating data from XML to Controls.

Module II

PHP: Introduction to PHP, Server side scripting, Role of Web Server software, including files, comments, variables and scope, echo and print, Operators: Logical, Comparison and Conditional operators, Branching statements, Loops, break and continue, PHP functions

Module III

Working with PHP: Passing information between pages, HTTP GET and POST method, String functions: strlen, strops, strstr, strcmp, sustr, str_replace, string case, Array constructs: array(), list() and foreach(),

Module IV

PHP advanced functions: Header, Session, Cookie, Object Oriented Programming using PHP: class, object, constructor, destructor and inheritance.

Module VPHP & MySQL: Features of MySQL, data types, Introduction to SQL commands- Select, Delete, Update, Insert, PHP functions for MySQL operations: mysqli_connect, mysqli_select_db, mysqli_query, mysqli_fetch_row, mysqli_fetch_array, mysqli_fetch_object, mysqli_result, Insertion and Deletion using PHP, Displaying data from MySQL in webpage.

References:

1. Jon Ducket, Web Programming with HTML, XHTML, CSS, Wrox Beginning
2. Jim Converse & Joyce Park, PHP & MySQL Bible, Wiley.

SDC2ST07 Lab3: PHP and MySQL

Hours: 4 **Credit: 5**

Programming List for PHP and MySQL

1. Create an HTML page with 3 type(orderd, unorderd and definition) list element tag
2. Create an HTML page which display all alignment option of an image
3. Write a javascript progrm to find the area and circuference of a circle
4. Write a javascript program to show the Alert Box?
5. Write a program to create an XML file and store student details.
6. Write a program to insert and retrieve details of an employee with an XML file
7. Write a program to display contents in dropdown list from a XML file.
8. Write a php script to print first N prime numbers
9. Write a php script generate fibinocci series within a range
10. Write a php script to generate a pay slip (using switch and if condition) by accepting name designation
11. Write a php script to create login form using session and database
12. write a php script to accept stock details store the details in a database and display inventory details
13. Write a php script to add new elements to the end of the array?

Semester III

GEC3TW08 Technical Writing

Hours: 4 **Credit: 4**

Module I

Introduction to Technical Communication: What Is Technical Communication, What Are Your Roles as a Communicator, Technical Communication and Your Career, Characteristics of a Technical document, What Is Technical Communication.
Understanding Ethical and Legal Considerations:-A Brief Introduction to Ethics Your Ethical Obligations, Your Legal Obligations, The Role of Corporate Culture in Ethical and Legal Conduct, Communicating Ethically Across Cultures, Principles for Ethical Communication.

Module II

Writing Technical Documents Writing Collaboratively: Planning, Drafting, Revising, Editing, Proof reading, Advantages and Disadvantages of Collaboration, Managing Projects, Conducting Meetings, Using Social Media and Other Electronic Tools in Collaboration, Gender and Collaboration, Culture and Collaboration.

Module III

Planning the Document: Analyzing Your Audience and Purpose:- Techniques for Learning About Your Audience, Communicating Across Cultures, Applying What You Have Learned About Your Audience, Using Graphics and Design for Multicultural Readers, Writing for Multiple Audiences, Gaining Management's Approval, Revising Information for a New Audience and Purpose.
Researching Your Subject:-Understanding the Differences between Academic and Workplace Research, Understanding the Research Process, Choosing Appropriate Research Methods, Conducting Secondary Research, Conducting Primary Research.
Organizing Your Information:-Understanding Three Principles for Organizing Technical Information, Using Basic Organizational Patterns.

Module IV

Developing and Testing the Verbal and Visual Information: Communicating Persuasively, Writing Coherent Documents:- Writing Coherent Lists, Writing Coherent Paragraphs, Creating a Coherent Design. Writing Effective Sentences:-Structuring Effective Sentences, Choosing the Right Words and Phrases Reviewing, Evaluating, and Testing Documents and Web Sites:-Understanding Reviewing, Evaluating, and Testing, Reviewing Documents and Web Sites, Conducting Usability Evaluations, Conducting Usability Tests.

Module V

Learning Important Applications: Writing Correspondence:- Understanding the Process of Writing Correspondence, Selecting a Type of Correspondence, Presenting Yourself Effectively in Correspondence, Writing E-mails, Writing Micro blogs.

Writing Proposals: - Understanding the Process of Writing Proposals, The Logistics of Proposals, The "Deliverables" of Proposals, Persuasion and Proposals, Writing a Proposal, The Structure of the Proposal, Sample Internal Proposal.
Writing Lab Reports:-Persuasion and Lab Reports, Understanding the Process of Writing Lab Reports, Understanding the Structure of the Lab Report, Sample Lab Report.
Making Oral Presentations:-Understanding the Role of Oral Presentations, Understanding the Process of Preparing and Delivering an Oral Presentation, Preparing the Presentation, Delivering the Presentation, Answering Questions after the Presentation.
Connecting with the Public: - Understanding the Role of Connecting with the Public, Persuasion and Connecting with the Public, Presenting Information to the Public, Collaborating with the Public Through Social Media.

References:

1. Technical Communication PDF 10th Edition by Mike Markel

SDC3ST09 ASP.NET Programming

Hours: 4 **Credits: 4**

Module I

Review of .NET frameworks, Introduction to C#, Variables and expressions, flow controls, functions, debugging and error handling, OOPs with C#, Defining classes and class members.

Module II

Assembly, Components of Assembly, Private and Shared Assembly, garbage Collector, JIT compiler. Namespaces Collections, Delegates and Events. Introduction to ASP.NET Microsoft.NET framework, ASP.NET lifecycle. CSS: Need of CSS, Introduction to CSS, Working with CSS with visual developer.

Module III

ASP.NET server controls: Introduction, How to work with button controls, Textboxes, Labels, checkboxes and radio buttons, list controls and other web server controls, web.config and global.asax files. Programming ASP.NET web pages: Introduction, data types and variables, statements, organizing code, object oriented basics.

Module IV

Validation Control: Introduction, basic validation controls, validation techniques, using advanced validation controls. State Management: Using view state, using session state, using application state, using cookies and URL encoding. Master Pages: Creating master pages, content pages, nesting master pages, accessing master page controls from a content page. Navigation: Introduction to use the site navigation, using site navigation controls.

Module V

Databases: Introduction, using SQL data sources, GridView Control, DetailsView and FormView Controls, ListView and DataPager controls, Using object datasources. ASP.NET Security: Authentication, Authorization, Impersonation, ASP.NET provider model.

Module VI

LINQ: Operators, implementations, LINQ to objects,XML,ADO.NET, Query Syntax. ASP.NET Ajax: Introducing AJAX, Working of AJAX, Using ASP.NET AJAX server controls. JQuery: Introduction to JQuery, JQuery UI Library, Working of JQuery

References:

1. Beginning Visual C# 2010, K. Watson, C. Nagel, J.H Padderson, J.D. Reid, M.Skinner, Wrox (Wiley) 2010.
2. Murach's ASP.NET 4 Web Programming with C# 2010, 4th Edition, Anne Boehm, Joel Murach, SPD.
3. Beginning ASP.NET 4 in C# and VB, I. Spanjaars, Reprint 2011.
4. ASP.NET 4.0 programming, J. Kanjilal, Tata McGraw-Hill. Programming
5. ASP.NET, D.Esposito, Microsoft Press (Dreamtech), Reprint 2011.
   ASP.NET. Visual C#.NET, Vijay Nicoel, TMH

SDC3ST10 Software Engineering

Hours: 4 **Credit: 5**

Module I

Software - Characteristics, Classification, Myths, Crisis, Software Engineering: Definition , Comparison with other disciplines ,Ethics & professional practice , Phases in Software Engineering, Challenges, Software Process, Project, Product - Components of Software process ,process framework, process assessment , Software Life Cycle Models , Selection criteria, Process change management , Quantitative process management

Module II

Software Requirements – Definition, Types, Requirement Engineering process, Feasibility Study - Types of feasibilities , Process Requirements Elicitation - techniques, Requirements Analysis – Structured Analysis, Object Oriented Modelling, Other approaches, Requirements Specification – Structure of SRS, Requirements Validation , Requirements Management – A Case study

Module III

Software Design – basic principles, concepts , Data design , Data Architectural design, Component level design , User Interface design ,Pattern based Software design, Design Notations, Design Reviews – types, process, evaluating reviews, Software Design Documentation, A Case study,

Software Coding – features, guidelines, Methodology, Programming practices, Verification techniques, documentation

Module IV

Software Testing - basics, guidelines, characteristics, Test Plan – steps in development, Software testing strategies, V Model of Software testing, Levels of Software testing – Unit, Integration, System, Acceptance, Testing Techniques (basic idea of black box and white box testing), Object Oriented testing, debugging, Software test report, Software Maintenance – basics, Legacy Systems, factors affecting maintenance, types of maintenance, Life cycle, Models, Techniques

Module V

Software Planning and Scheduling – project planning, planning process, project plan, Project Scheduling – principles, techniques, Project staffing, Risk management, Software Quality – Concepts, Quality Assurance Activities, Software reviews, Evaluation, Capability Maturity Model , Software Reliability, Software Configuration Management process, Concept of Software Re Engineering – approaches, process models

References:

1. Software Engineering Principles And Practices By Rohit, Khurana, Vikas Publishing House Pvt. Ltd.
2. Software Engineering A Practitioners Approach By ROGER S, Pressman 5th Edition Mcgraw Hill International Edition
3. Rajib Mall, Fundamentals of Software Engineering, PHI

SDC3ST11 Lab3: ASP.NET Programming

Hours: 5 **Credit: 5**

Program List for ASP.NET

1. Write a program to perform string operations
2. Write a program to illustrate various controls
3. Write a program to illustrate various validation controls
4. Write a program to create user control
5. Write a program using AdRotator
6. Write a program to create login page
7. Write a program to create student information system
8. Write a program to implement hospital management system
9. Write a program to create library management system
10. Write programs using stored procedure
11. Write a program to illustrate postback

SDC3ST12 (1) User Interface Designing

Hours: 4 **Credit: 4**

Module I

Importance of good user interface design, problems of poor or bad user interface, user centered design, observing users, interviewing users, questionnaire and surveys, environmental considerations, user support environment.

Module II

Usability, Learnability, Visibility, Efficiency, Errors and user control User-centered design, Task analysis, Generating designs, User interface (UI) software architecture, Layout, output, input, User testing

Module III

Controlled experiments, Experiment analysis, Web-scale research methods, Prototyping, Graphic design, Information visualization, Color design and typography, Accessibility, Internationalization, Heuristic evaluation, Animation, Input/output technology, Mobile user interfaces

Module IV

Photoshop : Defining page setup for web, Understanding file formats for web, Understanding Pixels & Resolution, Working with tools, Working with Multiple Images, Rulers, Guides & Grids, Working with layers, Merging Layers, locking layers, Blending modes, opacity & fill, Adjusting Canvas Size & Canvas Rotation, Creating text.

Module V

Photoshop continue, Applying styles effects, Creating web patterns, Levels, Curves adjustment, Patch tool image correction, Enhancing image for web, Retouching images, Transforming of images, Color pallete, Using filters for effect, Render, glass, wood texture, emboss, Creating Web Layout, Creating Web banners, Web Animation in Photoshop, Converting Photoshop Layout to HTML in Photoshop.

References:

1. User Interface Design and Evaluation By Debbie Stone, Caroline Jarrett, Mark Woodroffe, Shailey Minoch
2. The Design of Everyday Things. Basic Books, Norman, Donald A. 2002.
3. Usability Engineering. Nielsen, Jakob Morgan Kaufmann
4. Adobe Photoshop CS6 Classroom in a Book By Adobe Creative Team

SDC3ST12 (2) Search Engine Optimization

Hours: 4 **Credit: 4**

Module I

Search engine basics: definition, anatomy of a search engine, crawlers, spiders, and robots. Classification of search engines, explore major search engines, organic versus paid result, recognition and reading search result, analyzing ranking factor, using advance search techniques, vertical search engines.

Module II

SEO Strategies: understanding behavioral search`s impact on ranking, using verticals to rank, components of an search engine friendly page, programming languages and SEO, domain cloaking, hidden pages and error pages, using advanced search operators, discovering the types of spam, benchmarking the current traffic sources and volume, determining top competitors, search marketing.

Module II

Key word strategies: keyword research, site content analysis, evaluating keyword research, high traffic keywords, selecting the proper keywords, assigning keywords to pages, adjusting and updating keywords, using tools to aid keyword placement, keyword tools and services: Google AdWords, Yahoo search marketing, Microsoft adCenter.

Module IV

SEO Friendly Website: creating an optimum information architecture, content optimization, content delivering and search spider controls, content management system issues, navigation elements, site search, optimizing HTML constructs for search engines, making W3C-complient sites, HTML content stacking, selecting landing pages, on-page and off-page optimization, linking.

Module V

Maintaining SEO: site analytics, web metrics, web analytics, tracking behavior with web analytics, referring web sites, monetizing traffic, analytics packages (Google, Adobe), log file analytics, post SEO redesign, social-media optimization, mobile SEO.

References:

1. The Art of SEO: Mastering Search Engine Optimization, Eric Enge, Stephan Spencer, Rand Fishkin Jessie C. Stricchiola, O`REILLY
2. Search Engine Optimization, Jerri L. Ledford, 2nd Edition, Weily Publishing.
3. Search Engine Optimization All in one for Dummies, Burce Clay, Susan Esparza. JohnWeiley & sons, Inc.

Semester IV

SDC4ST13 Introduction to Computer Networks

Hours: 4 **Credit: 4**

Module I

Introduction to Networking, Uses of Computer Networks, Network Hardware, ISO OSI Reference Model, Transmission Media- Magnetic Media, Twisted Pair, Coaxial Cable, Fiber Optics, Wireless Transmission- Radio Transmission, Microwave Transmission, Satellite, PSTN – Structure of Telephone System, Trunks and Multiplexing, Switching, Mobile Transport System- GSM, CDMA.

Module II

Data link Layer Design Issues- Framing, Error Detection and Correction, Data link Protocols- Unrestricted Simplex Protocol, Simplex stop-and-wait Protocol. One Bit Sliding Window Protocol, Medium Access Control Sub-Layer, Bluetooth

Module III

The Network Layer: Virtual Vs Datagram Routing, Routing Algorithms- Shortest Path, Flooding, Distance Vector etc. Congestion Control Algorithms, TCP/ IP protocol Suit, IPv4, IPv6, transition from IPv4 to IPv6, ICMP.

Module IV

Transport Layer: Connection Establishment, Connection Release, Flow Control and Buffering, Multiplexing, Crash Recovery, Remote Procedure Call, Internet, Transport Protocols: TCP, TCP Service Model, UDP.

Module V

Application and Presentation Layer: DNS, namespace, Name Servers, Email Architecture and Services, Introduction to network Security, need for security, security approaches, Cryptography- Concepts and Techniques, Symmetric Key Algorithms, Asymmetric Key Algorithms, Digital Certificates, SSL, TLS, Firewall, User Authentication, Certificate Based Authentication, Kerberos.

References:

1. Computer Networks – Andrew .S. Tanenbaum Pearson Edu Asia
2. William Stallings, Data and Computer Communications , Seventh Edition, Pearson Education

SDC4ST14 Software Testing Tools

Hours: 4 **Credit: 4**

Module I

Introduction to software testing process.-Psychology of testing-verification and validation-testinf team and development team-cost of quality- characteristics of test engineering- Difficulties of testing- Levels of testing-Testing approaches- types of testing- test plan -Criteria for completion for testing-Manual testing and its limitation-Overview of software testing tools- Need for automated testing tools- Taxonomy of testing tools-functional ,performance ,management and source code testing tools-selection of testing tools.

Module II

Overview of WinRunner-Testing and application of using Win runner-Test Script Language-GUI MAP File-Synchronization of test cases-Data driven testing-Rapid test Script Wizard- Mapping Custom object to a standard class-Checking GUI objects-Overview of silk test-Architecture of silk test – Testing an application using Silk Test-The 4 Test Scripting language- checkpoints- Data Driven Test Cases.

Module III

Overview of SQA Robot –Testing an application using SQA Robot –Synchronization of Test Procedure-Creating Check points –Overview of load runner—Creating Vuser script using Virtual User Generator- Creating Virtual User Load Runner controller- Overview of JMeter- JDBC Test –HTTP Test.

Module IV

Overview of test Director- Testing management process-Managing testing process using test director- GNU Tools- -Timing of programs- Profiler- Code Optimization_ Productivity Tools-Portability Testing tools- Configuration management tools- Coding guidelines and Standards.

Module V

Overview of Quick test professionals- Testing an application using QTP- Synchronization of test cases- Creating Checkpoints- Testing calculator with Parameterization- Testing Database application- Testing a web application.

References:

1. Software testing Tools, Dr.K.V.K.K Prasad, Dreamtech Press, 2008.
2. Pressman," Software Engineering –A Practotioners approach", MG –Hills.

SDC4ST15 Lab4: Software Testing

Hours: 4 **Credit: 5**

WinRunner: Configure WinRunner, functional/regression testing using WinRunner, Create scripts for unattended testing, synchronization of test cases, use data driven wizard and GUI checkpoints, rapid testing.

SQA Robot: recording test cases, running the test procedure etc.

Test Director: familiarize test director.

Quick test professional: working with QTP, synchronization, checkpoints etc.

Semester V

SDC5ST17 PHP Frameworks: CakePHP and CodeIgniter

Hours: 4 **Credit: 4**

Module I

Object Oriented PHP: Introduction, class, object, built in classes, exceptions, database classes, web services, Inheritance, polymorphism.

Module II

CakePHP: Installation, permissions, URL rewriting, configuration, routing, redirect routing, handle named parameters in URL, Request and response objects, Controllers, the app controller, request flow, controller actions, interacting with views, configuring components to load, configuring helpers to load, request life cycle callbacks.

Module III

Views, app view, view templates, layouts, elements, using view blocks, Models, console and shells, bake console, code generation with bake, Debugging, Deployment. Security, session. Plugins.

Module IV

Codeigniter: introduction, installation, static pages, codeigniter URL, controllers, views, models, helpers, reserved names, codeIgniter libraries, drivers, hooks, caching.

Module V

Error handling, profiling applications, running via the cli, managing applications, auto loading resources, common functions, security.

References:

1. Object Oriented PHP: concepts, techniques and code by Peter Lavin.

2. Instant CakePHP Starter by Mark Robert Henderson
3. CakePHP Application Development By Ahsanul Bari, Anupom Syam
4. Codeigniter for Rapid Php Application Development By David Upton
5. Professional CodeIgniter By Thomas Myer

SDC5ST18 Programming in Mobile Devices- Android

Hours: 4 **Credit: 4**

Module I

Hello Android: *What is Android?*- Architecture, Platform philosophy, The Open Handset Alliance, Android platform types and versions. *Essential*- Installing and configuring Eclipse, Installing the Android SDK, Overview of the Android NDK. *Android Development Tools*- Android device emulator, Dalvik Debug Monitor Service (DDMS), Android Debug Bridge (ADB). *Inside the Development Environment*- Project Structure and types, Dalvik Virtual Machine, Basic application structure, Android libraries.

Module II

Android Development: *Android Application Anatomy*- What makes an Android application?, Application manifest, Application lifecycle, Resources and system resources, Application priority and process state, Localization. *Activities*- Creating activities, Activity states, Activity state changes, Sub-activities, Built-in activity classes. *UI design fundamentals*- Code and UI separation, XML elements and attributes describing UI. *Views, controls, widgets, and layouts*- Introducing views, Selectors and lists, Menus, sub-menus, and context menus, Fonts, WebKit browser, Custom widgets and controls.

Module III

Intents, Adapters, and Dialogs: *Introducing Intents*- Built-in intents and Linkify, Launching activities and sub-activities, Returning data from activities, Intent filters, Implicit intents, Retrieving available actions via introspection, Broadcast intents and receivers. *Introducing Adapters*- Built-in Android adapters, Adapters and data binding. *Introducing Dialogs*- Built-in dialogs and the dialog builder, Activities as dialogs.

Module IV

Storing and Consuming Data: *Preferences*- Saving activity state, Preference pages, Shared preferences. *Local storage*- Accessing files, File management tools. *Local database*- SQLite overview, Managing and accessing SQLite, Cursors and content values, *Content providers*- Using content providers, Built-in content providers, Custom content providers.

Module V Building Mobile Applications with Android: Android Layouts, Android UI and Advance Java, Android GUI Architecture, Layouts, Android Widget Toolbox, Web View, Grid View, Understanding Android Menus, Intents and Processes, Graphics Animation and Multimedia, Bitmaps TOPS Technologies-Android training program, Introduction to Audio on Android, Introduction to Video, Android Persistence, Android Preferences, Using File system,

Accessing SD cards, Location and maps, Using GEO Coder, Creating and Using Overlays, Projections, Using Wake Locks, Android Text To Speech, Inter process Communication, Paranoid Android, Broadcast receivers, Using Camera, Sensor Manager , Bluetooth, Network, Wi-Fi, AIDL and IPC, XML Parsing, Dom Parsing, SAX Parsing, JSON Parsing, SQLite Databases, Services and Content Providers.

References:

1. Jeff Friesen, Learn Java for Android Development, Third Edition.
2. Marko Gargenta, Masumi Nakamura , Learning Android: Develop Mobile Apps Using Java and Eclipse, Second Edition.
3. Brian Hardy, Bill Phillips, Android Programming: The Big Nerd Ranch Guide, First Edition.

SDC5ST20 Data Structure Using Java

Hours: 4 **Credit: 4**

Module I

Introduction to data structures: definition, categories of data structures, space complexity, time complexity, asymptotic notations. Arrays: structure of arrays, one dimensional array, multidimensional arrays. Linked list: representation and operations with linked list, Single linked list, double linked list, circular list, header list. Sparse matrix, array and linked list representation of sparse matrix.

Module II

Stack: Definition, operation on stack, Implementation Using Stack and Linked List. Applications of Stack: Evaluation of arithmetic expressions. Conversion of expressions: prefix, infix, postfix. Queue: Definition, implementation using array and linked list, circular queue, dequeue, priority queue.

Module III

Trees: Basic terminology. Binary trees, representation of binary tree (array and linked list), tree traversals, threaded binary tree. Binary Search Tree: definition, insertion, deletion, traversals and searching. AVL tree, B-tree, B+ tree. Heap: Min heap, Max heap, insertion and deletion.

Module IV

Algorithm design techniques: Divide and conquer, greedy method, dynamic programming. Graph: Representation of graph: Adjacency matrix, adjacency list, breadth search (BFS), depth first search (DFS). Spanning Tree, Dijkstras Algorithm.

Module V

Searching algorithms: Linear searching, binary search, complexity of different search methods. Hashing, different hashing functions, methods for collision handling. Sorting algorithms: insertion sort, bubble sort, selection sort, quick sort, merge sort and heap sort, comparison and implementation.

References:

- Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford stein. Third Edition. PHI
- Fundamentals of Data Structures, E. Horwitz and S. Sahni.
- Data Structure and Algorithms using Java. William McAlliser.

GEC5BC13 Business Communication

Hours: 4 **Credit: 4**

Module I

Introduction-importance of communication - basic form of communication – principles of effective communication - self-development and communication - development of positive personal attitudes – barriers to communication.

Module II

Communication through letters – essential qualities of a business letter – appearance – layout-structure - body and kinds of business letters.

Module III

Personal correspondence – application for appointment – resume – reference – appointment letter – letter of introduction – recommendations – resignation letters – show cause – charge sheet dismissal letter.

Module IV

Corporate communication – formal and informal commutation network – grapevine – business communication policies – mock interviews – seminars – listening exercising – presentation – presentation skill – oral presentation – sales presentation – training presentation – motivation speeches – report writing – report preparation – visual aids – MS-Powerpoint.

Module V

Learning business information - news of reading techniques – listening to lectures by individual and team faculty, and not taking – student seminars – individual and team presentation – filed studies, case studies and project report. Posting problem for investigation, data location, primary

and secondary sources, use of cross tabulation, tabular presentation, diagrammatic representation of data, deducting inferences, reporting results and suggesting executive actions.

References:

1. Essentials of Business Communications, Mary Ellen Guffey, Dana Loew
2. Contemporary Business Communication, Scot Ober
3. Business Communication, Marty Brounstein, Arthur H Bell, Dayle M Smith, Connie Isbell, Alan Orr

GEC5SM14 Software Project Management

Hours: 4 **Credit: 4**

Module I

Introduction to Software Project Management: Project Definition – Contract Management – Activities Covered By Software Project Management – Overview of Project Planning – Stepwise Project Planning.

Module II

Project Evaluation: Strategic Assessment – Technical Assessment – Cost Benefit Analysis – Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

Module III

Activity Planning: Objectives – Project Schedule – Sequencing and Scheduling Activities – Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity on Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning And Control.

Module IV

Monitoring and Control: Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Prioritizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

Module V

Managing People and Organization Teams: Introduction – Understanding Behavior – Organizational Behavior: A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation– The Oldman – Hackman Job Characteristics Model – Working In Groups – Becoming A Team –Decision Making – Leadership – Organizational Structures – Stress –Health And Safety – Case Studies.

References:

1. Bob Hughes, Mikecotterell, “Software Project Management”, Third Edition, Tata McGraw Hill, 2004.
2. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill, 2001
3. Royce, “Software Project Management”, Pearson Education, 1999
4. Jalote, “Software Project Management in Practice”, Pearson Education, 2002

SDC5ST21 Lab5: Programming in Mobile Devices

Hours: 5 **Credit: 5**

LAB: Restaurant tab splitter and tip calculator (all in one activity). TODO list, Item editor (separate activity), Using the contact picker (“call” TODO item) OR inputting phone number manually, Using the dialer (when clicking a “call” TODO item), Persisting the TODO list (SQLite), Persisting the TODO preferences (SharedPreferences), Persisting the TODO UI state, e.g. the item text (activity Bundle), (OPTIONAL) Exposing the TODO items through a content provider and using them from another application.

SDC5ST22 Lab6: Data Structure Using Java & PHP Frameworks

Hours: 5 **Credit: 5**

Sample Program List:

1. Array Operations
2. Linked List
3. Stack Using array
4. Stack Using Linked List
5. Queue Using Linked List
6. Queue using Array
7. Circular Queue
8. Bubble Sort
9. Selection Sort
10. Merge Sort
11. Binary Search
12. Linear Search
13. Binary tree
14. Binary Search Tree