S-01 & 02 June, 2016 AC after Circulars from Circular No.100 & onwards - 1 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO. SU/Sci./B.Sc. Syllabi/100/2016

It is hereby notified for information to all concerned that, on the recommendation of the Ad-hoc Board in Computer Science and I.T. the **Academic Council at its meeting held on 01 & 02 June, 2016** has accepted the following revised syllabi as mentioned against their names under the Faculty of Science :-

Sr. No.	B.Sc. III Year Revised Syllabus		Semester
[1]	B.Sc. Computer Science	Degree Course	V & VI
[2]	B.Sc. Information Technology	Degree Course	V & VI
[3]	B.C.A. Science	Degree Course	V & VI
[4]	B.Sc. Animation	Degree Course	V & VI
[5]	B.Sc. Computer Science	Optional	V & VI
[6]	B.Sc. Information Technology	Optional	V & VI
[7]	B.C.A. Science	Optional	V & VI
[8]	B.Sc. Computer Maintenance	Optional	V & VI

This is effective from the **Academic Year 2016-2017** and onwards.

These **syllabi are also available on the University Website www.bamu.ac.in**

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.SU/B.Sc./2016/2389-639
A.C.M.A.I.No.10

Date:- 07-06-2016.

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Director,
Board of College and
University Development.

..2..

:: [2] ::

Copy forwarded with compliments to :-

1] The Principals, affiliated concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.

Copy to :-

1] The Controller of Examinations,

2] The Section Officer, [B.Sc. Unit],

3] The Section Officer, [B.C.S. Unit],

4] The Programmer [Computer Unit-1] Examinations,

5] The Programmer [Computer Unit-2] Examinations,

6] The In-Charge, E-Suvidha Kendra, [Professional Unit], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambedkar Marathwada University,

7] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

-=**=-

S/-0070616/-*

NAAC Re-accredited with Grade 'A'

Dr. Babasaheb Ambedkar Marathwada University

Aurangabad-431004

REVISED SYLLABUS OF

B.Sc. (Computer Science)

Three Year Course

(With Effective From: 2014-15)

हे ज्ञानिची पवित्रता | ज्ञानीचि आथि ||

Dr. Babasaheb Ambedkar Marathwada University
Aurangabad-431004.
Tel.No. : 0240-2403400/431, Fax:0240-2403113
Website : www.bamu.ac.in, http://bamua.digitaluniversity.ac.in

Dr. Babasaheb Ambedkar Marathwada University.

Appendix 'A'

A Candidate shall be admitted to the I year of the B.Sc. (Computer Science) degree course only if he/she satisfies the following condition:

1. He/ She must have passed the higher secondary (multipurpose) examination conducted by H.S.C. board Government of Maharashtra with science / technical subjects Or an Examination of any statutory University and Board recognized as equivalent thereto.

   OR

   He/She must have passed examination prescribed at the end of second year of the junior college conducted by the H.S.C. board, Government of Maharashtra with English, Second language, Physics, Chemistry, Mathematics and or Biology or one of the technical subjects prescribed at the said examination as the optional or elective subjects or an examination recognized as equivalent thereto.

   OR

   Candidate having offered prescribed vocational course (MCVC) with Computer techniques/I.T./Electronics.

   OR

   Three years Diploma Course in engineering conducted by the board of technical Education, Maharashtra State.

2. He/ She must have passed at qualifying examination.

A candidate who has passed the B.Sc.(Computer Science) examination of this university may be allowed to present himself subsequently at the degree examination in a subject or subjects other than those he has taken earlier provided that he puts in three years of attendance as a regular candidate for First, Second and Third year in the subject or subjects concerned excluding compulsory English, Second Language and remaining optional subject(s).

A candidate shall not be allowed to appear for such examination if he has passed the higher examination.

The Degree of Bachelor of Science (Computer Science) shall be conferred on candidate who has pursued a regular course of study consisting of six semesters in the relevant subject as prescribed and has appeared at the end examination and passed under the credit based system in all the examination prescribed for the Degree course in the faculty.

The pattern of the examination and the scope is indicated in the syllabus.[Annexure B]

- The Number of students in a theory class shall not exceed 60.
- Maximum number of students in a batch for practicals in first four semesters shall consist of 20 students and for fifth & sixth semester the batch shall consist of 15 students.
- The rules for admission to the subsequent (next) semesters will be the same as per the University guidelines.
- For Each course the concerned teacher will have to conduct Class tests after completion of 15 and 20 lectures. The mark list of the same is to be submitted to the university authority within 7 working days after the completion of class tests.
- Final Examination will be conducted by the University based on the complete syllabus.
- Final Practical Examination will be conducted by the university and examiners will submit the mars in the prescribed format of students for practical examination to the university.

The Number of Teaching Staff & infra-structure required to run the course will be as follow:-

The graduation is very important phase in the life of our young students. The college responsibly is not only to deliver a quality syllabus based education, but also to motivate them to be a good healthy citizen. In this direction, the college must have sufficient facilities to run the course. A guideline is listed below. The College must have following minimum facilities:

Infrastructure:

1. One Class room to accommodate 60 students. (approximately 250 sq.ft.)
2. A well equipped software Laboratory having a LAN system of 30 nodes and having internet connectivity with broad band. All legal software, antivirus software, firewall be available for smooth functioning of the laboratory.
3. A hardware laboratory having twenty microprocessor kits with add on cards as per their syllabus. Staff room of 100 sq.ft. with one table and one Almeria for each faculty member.
4. One office space of 100 sq.ft. with appropriate furniture.
5. One lady room of 100 sq.ft. with attached toilet.
6. One reading room of 200 sq.ft. with seating arrangements for at least 30 people. The library may be accommodated in the library.
7. One copy of every text book among five students for each subject be available along with one copy of reference book as per the syllabus.
8. Library must subscribe for computer and scientific magazines. Appropriate general reading materials must be available for overall development of students.
9. An open space for sports activities. The college must be encouraged to have sport equipments.

Staff:

1. The head of the department in the scale of reader/Professor.
2. The minimum number of teachers must be appointed as per the work load.Per semester, the work load may be computed on the basis of theory classes, tutorials and practical class per batch. Minimum number of teachers to run the course must be five excluding the head. Teachers must be appointed by the university/UGC norms. The quality of the course is directly related to quality of teachers for the course.
3. There must be one clerk in the office to look after administrative work. The placement of all staffs must be maintained properly.
4. One qualified librarian

 An appropriate number of class IV employees.

Curriculum Structure and Scheme of Evaluation: B.Sc.(C.S.)

Sr. No.	Paper Number	Name of the Paper Titles	Scheme of Teaching	Scheme of Evaluation(Marks)		
			Theory / Practical (Lect. /week)	Theory / Practical (Marks)	Exam Duration (in hrs.)	Total Mark
I Semester						
1	CS101-T	Computer Fundamentals	3	50	2	50
2	CS102-T	Digital Electronics	3	50	2	50
3	CS103-T	Microprocessor - I	3	50	2	50
4	CS104-T	C Programming – I	3	50	2	50
5	CS105-T	Communication Skill – I	3	50	2	50
6	CS106-T	Mathematical Foundation	3	50	2	50
7	CS107-P	Office Suite	4	50	2	50
8		C Programming – I	4	50	2	50
9	CS108-P	Microprocessor – I	4	50	2	50
10		Digital Electronics	4	50	2	50
II Semester						
1	CS201-T	Data Structure	3	50	2	50
2	CS202-T	Operating System	3	50	2	50
3	CS203-T	Microprocessor – II	3	50	2	50
4	CS204-T	C Programming – II	3	50	2	50
5	CS205-T	Communication Skill – II	3	50	2	50
6	CS206-T	Numerical Computation Methods	3	50	2	50
7	CS207-P	Data Structure	4	50	2	50
8		Microprocessor – II	4	50	2	50
9	CS208-P	C Programming – II	4	50	2	50
10		Numerical Comp. Methods	4	50	2	50

Sr. No.	Paper Number	Name of the Paper Titles	Scheme of Teaching	Scheme of Evaluation(Marks)		
			Theory / Practical (Lect. / week)	Theory / Practical (Marks)	Exam Duration (in hrs.)	Total Mark
III Semester						
1	CS301-T	Advance Data Structure	3	50	2	50
2	CS302-T	Unix Operating System	3	50	2	50
3	CS303-T	PC Maintenance	3	50	2	50
4	CS304-T	Programming in CPP	3	50	2	50
5	CS305-T	Database Management System	3	50	2	50
6	CS306-T	Statistical Method	3	50	2	50
7	CS307-P	Data Structure using CPP	4	100	2	100
8		DBMS	4		2	
9	CS308-P	PC Maintenance	4	100	2	100
10		Unix	4		2	

IV Semester						
1	CS401-T	Software Engg.	3	50	2	50
2	CS402-T	Fedora	3	50	2	50
3	CS403-T	Basic of Networking	3	50	2	50
4	CS404-T	Core Java	3	50	2	50
5	CS405-T	Adv. DBMS	3	50	2	50
6	CS406-T	Web Fundamental	3	50	2	50
7	CS407-P	Java in Fedora OS	4	100	2	100
8		Web Fundamental	4		2	
9	CS408-P	Based in Adv. DBMS and N/w	4	100	2	100
10		Mini Project	4		2	

Sr. No.	Paper Number	Name of the Paper Titles	Scheme of Teaching	Scheme of Evaluation(Marks)		
			Theory / Practical (Lect./week)	Theory / Practical (Marks)	Exam Duration (in hrs.)	Total Mark
V Semester						
1	CS501-T	Software Cost Estimation	3	50	2	50
2	CS502-T	Basic of Android O. S.	3	50	2	50
3	CS503-T	Core Java-II	3	50	2	50
4	CS504-T	Basic of Computer Graphics	3	50	2	50
5*	CS505-T	Beginners Prog. with PHP	3	50	2	50
6*	CS506-T	Basic of ASP.Net	3	50	2	50
7#	CS507-T	Data Mining	3	50	2	50
8#	CS508-T	Advanced Networking	3	50	2	50
9	CS509-P	Pr. Based on Adv. Java	4	100	2	100
10		Pr. Based on Comp. Graphics	4		2	
11	CS510-P	Pr. Based on Android O.S.	4	100	2	100
12		Pr. Based on PHP/ASP.Net	4		2	
VI Semester						
1	CS601-T	Software Quality & Testing	3	50	2	50
2	CS602-T	Android Application Development	3	50	2	50
3	CS603-T	Theory of Computation	3	50	2	50
4	CS604-T	Advanced Computer Graphics	3	50	2	50
5*	CS605-T	Advanced Prog. With PHP	3	50	2	50
6*	CS606-T	Programming Language: C#	3	50	2	50
7#	CS607-T	e-Commerce	3	50	2	50
8#	CS608-T	Ethics and Cyber Law	3	50	2	50
9	CS609-P	Pr. Based on Android Develop.	4	100	2	100
10		Pr. Based on PHP / C#	4		2	
11	CS610-P	Major Project	8	100	4	100
12						

*** and #: Any one paper is to be opted from the group**

PATTERN OF QUESTION PAPERS

Note : 1) All questions carry equal marks.

2) All questions are compulsory.

Q. No.	Format	Marks
1.	Multiple Choice/Fill in the blank/Match the pair/ one line answer. 1) 2) • • 10)	1 x 10 = 10
2.	a) b) OR a)	5 * 2 =10 10
3.	a) b) OR a)	5 * 2 =10 10
4.	a) b) OR a)	5 * 2 =10 10
5.	Write Short Notes On: (Any Two) a) b) c) d)	5 * 2 =10
	Total	**50**

* Not More than 3 bits should be asked in each question of 10 Marks.

(Only for Paper Setter)

B.Sc.(Computer Science)

Semester -V

Course: B.Sc.(C.S.) – V Seme Paper Code: CS-501

Software Cost Estimation

Unit- I

Introduction

Observation on Estimation, Planning process, Software Scope and Feasibility, Types of Resources, Project estimation.

Unit-II

Decomposition Techniques

Software sizing, Problem-Based Estimation, LOC-Based Estimation with example, FP- Based Estimation with example, Process-Based Estimation with example, Designing Use Cases, Use Cases- Based Estimation with example, Estimate Reconciliation.

Unit-III

Empirical Estimation Models

Structure of Estimation Model, COCOMO Models, Software Equation, Estimation for Object-Oriented Projects, Estimation for Agile Development, Estimation for Web Projects, Creating a Decision Tree, Outsourcing.

Reference Books:

1. Software Engineering a Practitioner's Approach By Roger S. Pressman (Seventh Edition) McGraw Hill

2. An Integrated Approach to Software Engineering, Pankaj Jalote, Narosa.

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-502**

Basic of Android Operating System

Unit – I **Environment Setup:** Setup Java Development Kit (JDK), Android SDK,

Eclipse IDE, Android Development Tools (ADT) Plugin, Create Android Virtual Device, Architecture: Linux kernel, Libraries, Android Runtime, Application Framework.

Application Components

Application Components Activities, Services, Broadcast Receivers, Content

Providers, Additional Components, Create Android Application, Anatomy of Android Application, The Main Activity File, The Manifest File, The Strings File, The R File, The Layout File, Running the Application.

Unit-II

Resources Organizing & Accessing: Alternative Resources, Accessing

Resources

Intents and Filters: Intent Objects, Action, Android Intent Standard Actions, Data, Category, Extras, Flags, Component Name, Types of Intents: Explicit Intents, Implicit Intents.

UI Layouts

Android Layout Types, Relative Layout Attributes, Grid View Attributes, Sub-Activity, Layout Attributes, View Identification, UI Controls, Android

UI Controls, TextView Attributes, AutoComplete Text View Attributes, Button Attributes, ImageButton Attributes, CheckBox Attributes, ToggleButton Attributes, RadioButton Attributes, RadioGroup Attributes.

Unit-III

Event Handling:

Event Listeners & Event Handlers, Event Listeners Registration, Styles and Themes, Defining Styles, Using Styles, Style Inheritance, Android Themes, Default Styles & Themes, Custom Components, Creating a Simple Custom Components.

Books & References:

1) Android Tutorial, Simply Easy Learning by tutorialspoint.com.

Link:http://www.tutorialspoint.com/android/android_tutorial.pdf

2) Professional Andriod 4 Application Development :Retomeier, Wrox publication.

3) Andriod Apps for Absolute beginners : Wallace Jadson, Apress.

4) The Complete Andriod Guide: Kevin Purdy

5) Javapoint Tutorial : http://www.javapoint.com/andriod-tutorial

Course: B.Sc. (C.S.) – V Seme **Paper Code: CS-503**

Core Java-II

Unit – I

Input/Output Stream: File, Directories, FilenameFilter, Byte stream, Character stream**,** InputStream ,OutputStream ,Working with Reader classes, InputStreamReader, BufferedReader , FileInputstream , FileOutputStream, Writer classes

Utilities: Simple Type Wrapper: Number**,** Character, Boolean,

Enumerations: Dictionary and StringTokenizer, Date,Math :Tramsendentals, Exponential, Rounding function,

Unit -II

Applets : Introduction to Applet , Types of Applet, Applet vs Application , Applet class, advantages of Applet , Applet Lifecycle, My First Applet, Applet tag, Passing Parameters to Applet .

Graphics:Basic Shapes: drawLine, drawArc, fillArc, drawPolygon, fillPolygon, Color & Color Methods, Fonts.

Unit III

Java Database Connectivity (JDBC): Design of JDBC, JDBC configuration, Executing SQL statement, QueryExecution, Scrollable and updatable resultsets, row sets, metadata, Transaction Processing.

Networking: InetAddress, Datagrams, Socket for client and Server, URL, URL Connection.

Reference Books:

1. Java Complete Reference, Herbert Schildt, Seventh Edition, Tata McGraw Hill.
2. Java Handbook, Herbert Schildt, Tata McGraw Hill.
3. Java EE 6 for Beginners, Sharanam Shah, Vaishali Shah, Shroff Publishers and Distributors
4. Advanced Java™ 2 Platform How to Program by H. M. Deitel , P. J. Deitel,S. E. Santry
   Prentice Hall publication.

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-504**

Basic of Computer Graphics

Unit-I

Basics Concept in Computer Graphics

Introduction to Computer Graphics, Application of Computer Graphics, Classification of Computer Graphics, Types of Graphics Devices, Video Display Devices, Input Devices, Display File and its Structure, Display file Interpreter, Display Processor, Graphics file Format.

Graphics in C:

Introduction to graphics in C : initgraph(), detectgraph() and closegraph() function, Drawing object in C , Line, Circle, Rectangle, Ellipse, Changing foreground & background colors, Filling object by color function.,drawpoly, fillpoly, floodfill, getcolor, settext, outtext,style,fonts,coloring.

Unit-II

2-D Transformation

Translation, Rotation, Scaling, Homogenous Coordinates for Translation, Homogenous Coordinates for Rotation, Homogenous Coordinates for Scaling, Composogation from 2D Transformation, Other TransformationReflection, Shear, and Inverse Transformation.

Unit-III

Line, Circle and Character Generation

Basics concept in line Drawing, Line Drawing Algorithm, Digital Differential Analyzer, Bresenham's Line Algorithm, Antialiasing of Lines, Method of Antialiasing, Increasing Resolution, Unweighted Area Sampling, Pixel Phasing, Representation of Circle ,Polynomial Method, Trigonometric Method, Circle Drawing Algorithm, DDA Circle Drawing Algorithm, Bresenham's Circle Drawing Algorithm, Character Generation, Stroke Method, Starbust Method, Bitmap Method.

Text Books:

1. Procedural Elements for Computer Graphics: D.F.Rogers
2. Mathematical Elements for Computer Graphics: D.F.Rogersand J.A.Adams
3. Computer Graphics : A.P.Godse, (IIIrd Edition) ,Technical Publication

Reference Books:

1. Computer Graphics by M. Pauline Baker, Donald Hearn, (2ndEdition) PHI Publication
2. Principles of Interactive Computer Graphics By. William. M. Newman. (IInd Edition) Mc.Graw Hill Publication.
3. Computer Graphics by V.K. Pachghare, (II nd Edition), Laxmi Publication

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-505**

Beginners Programming with PHP

Unit-1: Introduction to PHP: What is PHP? Why PHP? Evolution of PHP. Installation: PHP on windows and Linux, Configuring: Apache & PHP, Running & Testing PHP Script, Combining PHP with HTML.
PHP Language Basics: Building blocks of PHP: Variables, Data Types, Operators and Expressions and Constant.
Decision within PHP: *if , if.. else, if.. elseif .. else, switch*, Ternary Operator

Unit – 2: Looping within PHP: *while, do...while, for, Break* & *Continue* statement Functions in PHP: What is function, why functions, Calling function, Returning Value from function, Recursive function.
Arrays in PHP: What & Why Array, Creating Array, Associative Array, Multidimensional Arrays, Accessing Array, Manipulating Arrays, Sorting Arrays, Merging Arrays,

Unit -3: Objects in PHP**:** What is Class & Object, Creating a Class & Object, Object properties, object methods, Overloading, inheritance, Constructor and Destructor. String in PHP: Creating and Accessing String, formatting String, Searching String, Manipulating String.
Date and Time: Understanding TimeStamp, Getting Date and time, Extracting values of date-time, Formatting date-time.

Reference Books:

1) **Beginning PHP 5.3 ,** Author: Matt Doyle**,** Wiley Publishing, Inc.
2) **SAMS Teach yourself PHP in 24 hours,** Author: Matt Zandstra, Sams Publishing.
3) **"PHP, MySQL and Apache All in One"** , Author: Juliea C. Meloni, SAMS series

Course: B.Sc.(C.S.) – V Seme Paper Code: CS-506

Basic of ASP.Net

UNIT I -

Web designing, web browser, web pages, home page, web site, web servers, world wide web , Concepts of hypertext, hypermedia, versions of HTML ,Evolution of .NET, Benefits of .NET Framework, Architecture of .NET Framework, Components of .NET Framework.

UNIT II –

ASP.NET Page Life Cycle, understanding ASP.NET controls, applications, web servers, installation of IIS. Web forms, web form controls, server controls, client controls, adding controls to web form, buttons, text box, labels, checkbox, radio buttons, list box, drop, down list, Ad rotator control . Adding controls a runtime, Running a web application.

UNIT III –

Creating a multiform web project, Form validation: client side and server side validation, Validation controls: Required Field Validator, Range Validator, Comparison Validator, Regular Expression Validator, Custom Validator, Validation Summary, Calendar control.

References:

1) .NET 4.0 Programming(6-in-1) Black Book- (Dremtech Press)
2) The Completer Reference ASP.NET – Mathew Macdonald (TMH)
3) Professional ASP.NET – Wrox publication
4) VB.NET Programming Black Book – Steven Holzner (Dreamtech pub.)
5) Introduction to .NET framework – Wrox publication.
6) ASP.NET Unleashed - bpb publication.

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-507**

Data Mining

Unit -1

Data Mining Introduction:

What is Data Mining?, Definition, DBMS Vs Data Mining, DM Techniques, Issues and Challenges in DM, DM Application Areas, DM Applications-Case Studies, Current Trends Affecting DM, Basic Data Mining Task.

Unit – 2

Association Rule:

What is an Association rule?, Method to discover Association Rule, A Priori Algorithm, Partition Algorithm.

Clustering Techniques: Clustering Paradigm, Partitioning Algorithm, Similarity and Distance Measure, Hierarchical Algorithm.

Unit – 3

Decision Tree: What is a decision tree? Tree Construction Principle, Best Split, Splitting indices, Splitting Criteria

Web Mining: Introduction, Web Content Mining, Web Structure Mining, Web Usage Mining.

Reference:

1. **Data Mining Techniques :** Arun K. Pujari ,
2. **Data Mining: Introductory and Advanced Topics:** M.H.Dunham Pearson Education.
3. **Data Mining: Concepts & Techniques,** Morgan Kaufman. 2006

Course: B.Sc.(C.S.) – V Seme **Paper Code: CS-508**

Advanced Networking

Unit I

The OSI reference model: concept of layers, protocols, interfaces and services, TCP/IP model.

Data Link Layer: Error correction & detection, Types of errors, Detection VS Correction, Block Coding, Linear Block codes(single parity check, hamming codes), Cyclic codes, CRC Encoder & Decoder, CRC Polynomial, Checksum.

Data Link Control & Protocols: Framing, Flow & Error Control, Simplest, Stop-N-Wait, Stop-N-Wait ARQ, Go Back N ARQ, Selective Repeat ARQ, Piggybacking. HDLC

Unit II

Network Layer: Logical addressing, IPv4 Addresses, Classful & Classless addresses, NAT, IPv6 Addressing,

Network layer protocol: Internetworking, IPv4, IPv4 protocol packet format, IPv6 Protocol & Packet format, IPv4 VS IPv6, Transition from IPv4 to IPv6, Address

Resolution protocols: (ARP, RARP), BOOTP, DHCP, Routing Protocols - Delivery, forwarding, routing, types of routing, routing tables, Unicast Routing, Unicast Routing protocols, RIP, Concepts of OSPF, BGP & Multicast Routing

Unit III

Transport Layer: Process to process delivery, UDP, TCP.

Congestion Control & Quality of Service: Data traffic, Congestion, Congestion Control (Open Loop, Closed Loop & Congestion control in TCP), QoS and Flow Characteristics.

Application Layer: DNS, Remote Logging(Telnet), SMTP, FTP, WWW, HTTP

Reference:

1) Data Communication & Networking (Forouzan) , Tata McGraw-Hill Education

Additional Reference:

1) Computer Networks and Internets - Douglas Comer, Prentice Hall

2) Computer Networks - Andrew Tanenbaum, Prentice Hall

Course: B.Sc.(C.S.) **Semester : V**

Topic: Pr. Based on Adv. Java **Paper No.: CS509P (A)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : V**

Topic: Pr. Based on Computer Graphics **Paper No.: CS509P (B)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : V**

Topic: Pr. Based on Android O.S. **Paper No.: CS510P (A)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : V**

Topic: Pr. Based on PHP/ASP.Net **Paper No.: CS510P (B)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

B.Sc.(Computer Science)

Semester -VI

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-601

Software Quality and Testing

Unit-I

Quality Concepts

Software and Quality, Garvin's Quality Dimensions, McCall's Quality Factors, ISO 9126 Quality Factors, Risk, Quality and Security, SE Methods, Project Management Techniques, Quality Control and Assurance

Quality Assurance

Elements of Software Quality Assurance, SQA Task Goals and Matrices, Formal Approach to SQA, Six Sigma for SE, ISO 9000 Quality Standards, SQA Plan.

Unit-II

Software Testing Strategies

Verification and Validation, Picture of Software Testing Strategies, Criteria for complication of testing, Strategies issue, Strategies for Conventional Software and Web Apps, Validation Testing, System Testing, Debugging.

Unit-III

Testing Conventional Applications

Testing Fundamentals, Internal and External view, White-Box Testing, Basic Path Testing, Control Structure Testing, Black-Box Testing, Testing Client-Server Architecture.

Testing Web Applications

Dimensions of Quality, Errors within a Web App, Testing Strategy and planning, Testing process, Content Testing, Database Testing, User Interface Testing, Navigation Testing, Configuration Testing, Load Testing, Stress Testing.

Reference Books:

1. Software Engineering a Practitioner's Approach By Roger S. Pressman (Seventh Edition) McGraw Hill.
2. An Integrated Approach to Software Engineering, Pankaj Jalote, Narosa.

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-602

Android Application Development

Unit I: Android SDK Features

Access to Hardware including Camera, GPS, and Accelerometer, Native Google Maps, Geocoding, and Location-Based Services, Background Services, SQLite Database for Data Storage and Retrieval, Shared Data and Interapplication Communication, P2P Services with Google Talk, Extensive Media Support and 2D/3D Graphics, Optimized Memory and Process Management, The Dalvik Virtual Machine, Advanced Android Libraries.

Android Development Tools

Types of Android Applications, Hardware-Imposed Design Considerations, Users, Environment, The Android Emulator, Dalvik Debug Monitor Service (DDMS), The Android Debug Bridge (ADB).

Unit II: Applications and Activities:

Application Manifest, Manifest Editor, Android Application Life Cycle, Understanding Application Priority and Process States, Externalizing Resources, Fundamental Android

UI Design: The Android Widget Toolbox, Layouts, Compound Controls, Custom

Widgets and Controls, Android Menu System, Activity Menu,Intents, Broadcast Receivers, Adapters, and the Internet: Intents to Launch Activities, Intent Filters to Service Implicit Intents, Intent Filters for Plug-ins and Extensibility, Intents to Broadcast Events, Android-Supplied Adapters, Internet Resource.

Data Storage, Retrieval, and Sharing

Creating and Saving Preferences, Retrieving Shared Preferences, Saving the Activity State, File Management Tools, Databases in Android: SQLite, Cursors and Content Values, Content Providers.

Maps, Geocoding, and Location-Based Services: Location Providers, Geocoder, Map-Based Activities.

Unit III: Advanced Development in Android:

Controlling Services, Threads, Customizing Toasts, Toasts in Worker Threads, Notification Manager, Triggering Notifications. Peer-to-Peer Communication: Android Instant Messaging, Sending & Listening SMS.

Accessing Android Hardware: Media APIs, Controlling Camera Settings, Sensor Manager, Accelerometer and Compass, Android Telephony, Bluetooth, Managing Network and Wi-Fi Connections. Advanced Android Development: Paranoid Android, AIDL to Support IPC for Services, Internet Services, Rich User Interfaces.

Books & References:

1) Android Tutorial, Simply Easy Learning by tutorialspoint.com.
   Link:http://www.tutorialspoint.com/android/android_tutorial.pdf
2) Professional Andriod 4 Application Development :Retomeier, Wrox publication.
3) Andriod Apps for Absolute beginners : Wallace Jadson, Apress.
4) The Complete Andriod Guide: Kevin Purdy

Javapoint Tutorial : http://www.javapoint.com/andriod-tutorial

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-603

Theory of Computation

Unit-I

Introduction: Sets, relations, functions, graphs, trees, mathematical induction.

Regular expressions: FA and regular expression, pumping lemma for regular sets, applications of pumping lemma, closure properties of regular sets, regular sets and grammar, types of grammar (type 0, type 1, type 2, type 3)

Unit-II

Finite automata: definition, transition systems, acceptability of strings, NFA, DFA, equivalence of DFA and NFA, melay moore model, minimization of automaton, Applications.

Unit-III

Formal Languages, Chomsky classification of languages, languages, their relation and automaton.

Reference Books

1. J E Hopcroft, R Motwani and J D Ullman, Introduction to Automata theory, Languages
   and Computation, Pearson Education Asia, 2003.
2. Daniel A Cohen, Introduction to Computer Theory, Hardcover (1990) by. John Wiley &
   Sons
3. K. L P Mishra, N Chandrashekharan, Theory of Computer Science, PHI 2001
4. Martin John C, Introduction to Language ad Theory of computations (TMH) 2004

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-604

Advanced Computer Graphics

Unit-I

3-D Transformation

Translation,ScalingRotation,Shearing, Reflection, Multiple Transformation Projection, Perspective Projection, Parallel Projection, Types of Parallel & Perspective Projection, Vanishing Points. Diffuse Illumination, Specular Reflection.

Unit-II

Curves and Fractals

Curve Generation, Representation of Parametric & Non-Parametric Curves, Spline Representation Parametric Representation of Circle & Ellipse, Bezier curves, B-Spline curves Fractals, classification of fractals, Topological Dimension, fractal Dimension, Hilbert's curves ,Koch curve.

Unit-III

Colour Model and Animation

Properties of Light, CIE Chromaticity Diagram, Colour Primary Systems, Color Matching Experiments, Colour Models: RGB, CMY and HSV.Introduction of Animation, Animation Using Colour Table, Animation of Wireframe Models.

Text Books:

1. Procedural Elements for Computer Graphics: D.F.Rogers
2. Mathematical Elements for Computer Graphics: D.F.Rogers and J.A.Adams
3. Computer Graphics by M. Pauline Baker, Donald Hearn, (2ndEdition) PHI Publication

Reference Books:

1. Computer Graphics: A.P.Godse,(IIIrd Edition), Technical Publication
2. Principles of Interactive Computer Graphics By. William. M. Newman. (IInd Edition) Mc.Graw Hill Publication.
3. Computer Graphics by V.K. Pachghare, (II nd Edition), Laxmi Publication

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-605

Advanced Programming with PHP

Unit-I: Handling HTML Forms in PHP: Creating HTML Form, Capture Data Sent,

Handling: Empty form data, Multi-Value fields, Validating Form Data, Difference between GET and POST, Global and Environment Variables, Generating Web-form in PHP, Create Multi-step Form, Hidden fields, Redirecting the user.

Unit – II: Cookies and user sessions in PHP: State and Stateless Webpage,

Cookies: Anatomy of cookies, Setting a cookies with PHP, Deleting a

cookies, Creating Session Cookies,

QueryString: Working with QueryString, Creating QueryString.

Session: Using PHP Session to Store Data: Creating a Session, Reading & Writing Session Data, Destroying a Session, Create a User Login System.

Unit – III: Introducing Database and SQL: Basics of MySql, Connecting to the Database Server, Creating Database, Creating Table.

Retrieving data: Limit the number of results returned, Order and group results, Query multiple tables at once, Use various MySQL functions and other features to build more flexible queries

Manipulating data from SQL with PHP: Inserting new records into tables using INSERT statements, changing field values within records with UPDATE statements, deleting records using DELETE statements.

Reference Books:

1) **Beginning PHP 5.3 ,** Author: Matt Doyle**,** Wiley Publishing, Inc.
2) **SAMS Teach yourself PHP in 24 hours,** Author: Matt Zandstra, Sams Publishing.
3) **"PHP, MySQL and Apache All in One"** , Author: Juliea C. Meloni, SAMS series

Course: B.Sc.(C.S.) – VI Seme Paper Code: CS-606

Programming Language: C Sharp

UNIT I :

Introduction : Basic Concepts, Features, Common Language Specification

C# Types: Simple type, Struct type, Object type Class type, Interfaces, String type, Arrays , Boxing & unboxing Conversions , Implicits , Explicits , Standard & User Defined Conversions.

UNIT II :

Control Statements : Selection Statements – if , Switch, Iteration Statements – For, For-Each, While , Do statements.

Classes & Methods : Constructors & Destructors ,Methods-Parameters, Overriding, Hiding class properties , Indexes , Modifiers, Class member Access, Multi cast deligates

Inheritance & Polymorphism : Inheritance- Basic class & Derived Class , Polymorphism , Base class with Virtual method, Derived class with override methods

UNIT III :

Interfaces: Base, body , members , methods , properties , events, indexes, mapping, implementation

Exception Handling : Checked & Unchecked statements, compiler settings for overflow checking , Programmatic overflow checking , Exception handling statements – try & catch , try & finally , try- catch-finally , throwing exception & rethrowing exception

Reference Books :

1 . C# : A Beginners Guide – Childt , Herbert (Tata Mcgraw Hill , New Delhi)
2. C# The basics , Vijay Mukhi (BPB Publications)
3. C# Programming (Wrox Publications)
4. C# Programming Black Book – Matt Telles (DreamTech Publications)

Course: B.Sc.(C.S.) – VI Seme **Paper Code: CS-607**

E-Commerce

Unit-I

Introduction, IT and business, E-commerce: Concepts Electronic Communication, PCs and Networking, E-mail, Internet and intranets. EDI to E-commerce, EDI, UN/EDIFACT

Unit-II

Concerns for E-commerce Growth, Internet bandwidth, Technical issues, Security issues. India E-commerce Readiness, Legal issues, Getting started.

Security Technologies: Encryption, Symmetric key Encryption, Public key encryption, Public key encryption using digital Signatures. Hashing techniques, Certification and key Distribution, Cryptographic.

Unit-III

The elements of E-commerce. SSL-Secure Socket Layer, SET-Secure Electronic Transaction Protocol for Credit card payment, E-Cash, E-check, Smart cards.

Electronic Payment System: Digital Cash, Digital Wallets, Digital checking payment systems, Electronic Billing, Wireless payment systems.

Software Package: PGP e-mail encryption software

Textbook:

1. E-Commerce: The Cutting Edge of Business, Kamlesh K. Bajaj & Debjani Nag, Tata McGraw Hill.
2. E- Commerce Strategy , Technologies and Applications, David Whiteley, McGraw Hill Edition

Reference Books:

1. E- Security, Electronic Authentication and Information Systems Security Sundeep Oberoi, TMG
2. E-Commerce Concepts, Models , Strategies by - G.S.V Murthy
3. E-Commerce- Kenneth C.Laudon and Carol Guercio Traver
4. Internet marketing and E-commerce-Ward Hanson and Kirthi Kalyanam

Course: B.Sc.(C.S.) – VI Seme **Paper Code: CS-608**

Ehtics & Cyber Law

Unit-I

Basic Concepts of Technology and Law, Understanding the Technology of Internet, Scope of Cyber Laws, Cyber Jurisprudence. Law of Digital Contracts The Essence of Digital Contracts.

Unit-II

The System of Digital Signatures. The Role and Function of Certifying Authorities. The Science of Cryptography, E-Governance, Cyber Crimes and Cyber Laws. Introduction to Intellectual Property.

Unit-III

Information Technology Act 2000 Cyber Law

Issues in E-Business Management. Major issues in Cyber Evidence Management, Cyber Law Compliancy Audit, The Ethics of Computer Security. Relevant Rules Notifications, Information Technology (Amendment) Act, 2008.

Text books:

1. Godbole,"Information Systems Security", Willey
2. Merkov, Breithaupt,"Information Security", Pearson Education
3. Yadav, "Foundations of Information Technology", New Age, Delhi
4. Schou, Shoemaker, "Information Assurance for the Enterprise", Tata McGraw Hill
5. Sood,"Cyber Laws Simplified", Mc Graw Hill
6. Furnell, "Computer Insecurity", Springer

Course: B.Sc.(C.S.) **Semester : VI**

Topic: Pr. Based on Android Development **Paper No.: CS609 P (A)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : VI**

Topic: Pr. Based on PHP/C# **Paper No.: CS609 P (B)**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Course: B.Sc.(C.S.) **Semester : VI**

Topic: Major Project **Paper No.: CS610**

Note:

1) It is expected that concerned Faculty is to introduce and make the students aware about the Project Development Environment as well as distribute all the students in group with minimum 2 and maximum 4 student's strength.

Minimum contents of Project Report

1. Introduction
2. Problem definition.
3. System Requirement Specification
   - 3.1. User Interview
   - 3.2. Current System flow diagram
   - 3.3. Proposed System.
4. E-R Diagram
5. DFD
6. Sample Screens
7. Conclusion