Shivaji University, Kolhapur

Department of Computer Science

M. Sc. semester III and IV syllabus under CBCS

Semester-III

Course Code	Title of the Course	Credits	Teaching Scheme(h/w)		Evaluation Scheme (Marks)		
			L	P	CIE	SE	Total
CS2311	Internet Programming	4	4		20	80	100
CS2312	Computer Graphics	4	4		20	80	100
CS2313	Elective 1. cloud computing 2. Distributed O.S 3. Data Mining 4. Open source Software's	4	4		20	80	100
CS2334	Software Project Management (CBCS)	4	4		20	80	100
CS2315	Internet programming Lab	4		12	20	80	100
CS2316	computer graphics Lab	4		12	20	80	100
CS2317	Project	4		12	20	80	100
Total		28	16	36	140	560	700

Semester-IV

Course Code	Title of the course	Credits	Teaching Scheme(h/w)		Evaluation Scheme (Marks)		
			L	P	CIE	SE	Total
CS2411	Research/Industrial Project	08	---	----	50	150	200
CS2412	Research seminar	04	----	----	100	-----	100
Total		12	---	----	150	150	300

Research Seminar: Shall be delivered on one of the advanced topic chosen in consultation with the guide after compiling the information from the latest literature and also internet. The concepts must be clearly understood and presented by student. Prior to presentation, he/she shall carry out the detailed literature survey from standard references such as International & National journals and periodicals recently published reference books etc. A hard copy of the report (A4 size, 12 fonts, Times New Roman, Single spacing both side printed) should be submitted to the Department before delivering the seminar.

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Credit System Syllabus
Master of Computer Science
Semester -III
Paper-IX (CS2311): Internet Programming

Unit 1:Introduction to .Net platform

Overview of .NET framework, problems with the earlier languages and .Net solution.

Overview of .Net binaries and .Net architecture. JIT compiler, the role of Microsoft Intermediate Language and Metadata. Understanding Common Language Runtime, Common Type System and Common Language Specification. .Net base classes, overview of .Net assemblies, .Net memory management. (15)

Unit 2: Basic Concepts in Vb.Net and C#

Visual Studio.Net IDE, Building application through Vb.Net and C#.Net. Language fundamentals like data type, operators, control statements: branching and looping, working with array, functions, procedures and properties, object oriented programming with VB.Net, Exception Handling with Vb.Net and C#.Net (15)

Unit 3:ADO.Net with C#.Net

Introducing Windows Forms, GDI+ namespaces, Windows Form controls, creating MDI applications, Data access with ADO.Net – The need for ADO.Net, ADO.Net namespaces, ADO.Net managed providers, OLEDB managed providers, SQL managed providers, Accessing XML through ADO.Net. Different reporting techniques in C#.Net and deployment of C#.Net application. (15)

Unit 4:Asp.Net with C#.Net

Web development and ASP.NET – Problems with classic ASP. Benefits of ASP.Net, ASP.Net namespaces, architecture of ASP.Net web application. Asp.Net page directives, page life cycle, Introduction to web server controls, validation server controls, cross page posting, working with master pages . (15)

Reference Books -

   1. Teach Yourself C# in 21 Days [Paperback] Bradley L. Jones

   2. Teach Yourself Visual Basic .NET in 21 days – Duncan Mackenzie and Kent Sharkey

   3. Introducing Microsoft .NET – David S. Platt

   4. ASP.NET Projects – Building 10 Enterprise Projects – Eric A. Smith

   5. C# 2008 Programming: Covers .Net 3.5 Black Book

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Paper-X (CS2312): Computer Graphics

Unit-I

Introduction   (15)

a) Input/output devices : Keyboard, Mouse, Trackball, Joysticks, Data Glove, Digitizers, Light pen, Touch panels, Image scanners, Printers and plotters. b) Logical Input Devices: Locator, Stroke, String, Valuator, Choice and Pick. c) Video Display Devices: Refresh Cathode-Ray Tubes, Raster-Scan Displays, Random-Scan Displays, Color CRT Monitors, Direct-View Storage Tubes, Flat Panel Displays d) Raster-Scan Systems: Video Controller, Raster-Scan Display Processor, Random-Scan Systems.

Unit-II

 Output Primitives   (15)

a) Line, Circle, Ellipse and Curve generation algorithm, b) Polygon filling algorithm c) Windowing and clipping : Window to Viewport transformation, line clipping and polygon clipping, B) 2D and 3D transformations : a) 2D basic transformation, other transformation, composite transformation, matrix

representation and homogeneous transformation, b) 3D concepts : Display models, parallel and perspective projections c) 3D basic transformation, other transformation & composite transformation.

Unit-III

Colors in computer graphics   (15)

Chromatic and achromatic light, properties of light, color lookup tables, Color models : XYZ, RGB, CMY, HSV, HLS, B) Curve generation: a) Bezier curve, properties of Bezier curve, Cubic Bezier Curve, b) B-Spline curves : i) Uniform, Periodic B Spline, ii) Cubic, periodic B-spline, iii) Open, uniform B- Spline iv) Non-uniform B-spline, c) Beta-Spline : Beta spline continuity conditions, cubic periodic beta spline, matrix Representation, d) Introduction to fractal (Koch and Hilberts curve)

Unit-IV

Illumination model and shading methods   (15)

a) Basic illumination models : Ambient light, diffuse reflection, specular reflection and its Phong model, shadows and transparency, ray tracing, displaying continuous tone images, halftone pattern and Dithering techniques, aliasing and antialiasing b)Phong rendering methods: Constant intensity shading, Gouroud shading, Phong and Fast Phong shading B) Visible surface detection methods :Classification of visible surface detection algorithm, Back-face detection, depth-buffer method, A-buffer method and Painter's algorithm C) Design and implementation of Application s/w : Study of advance software platform viz. 3-D studio max, Animator Pro, Introduction to OPEN GL, comparison with the facilities provided by conventional IDEs viz. C C++, Visual computing environment,

Reference Books :

1. Computer Graphics --- Donald Heran and M Pauline Baker
2. Computer Graphics --- F. S. Hill J R
3. Principles of interactive Computer Graphics --- Newmann Sproul
4. Fundamentals of interactive Computer Graphics --- Foley J D & van Dam
5. Theory and problems of Computer Graphics --- Plastock & Kelly

6. Computer Graphics --- A.P.Godase
7. Computer Graphics : a programming approach -- Steven Harrington

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Elective Paper : Paper-XI (CS2313): Cloud Computing

UNIT- I (15 hrs)

Computing Trends – Introduction of Distributed Computing, Grid Computing, Cluster Computing-Virtualization.,Introduction ,Properties & Characteristics – Pros and cons of Cloud Development – Cloud Platform Architectures: Amazon AWS, Microsoft Azure, Google App Engine etc.

UNIT-II (15 hrs)

Cloud Computing Architecture:Cloud Delivery models, The SPI Framework, Cloud Software as a Service (SaaS) , Cloud Platform as a Service(PaaS), Cloud Infrastructure as a Service(IaaS), Cloud deployment models, Public Clouds, Community Clouds, Hybrid Clouds, Alternative Deployment models, Expected benefits.

UNIT-III (15 Hrs)

Cloud Deployment Models -Deployment Models Introduction – Public Deployment Model – Private Deployment Model – Virtual Private Deployment Model – Hybrid Deployment Model – Community Deployment Model.

UNIT IV (15 Hrs)

Cloud Issues And Challenges: Organizational Readiness and Change management in cloud – Security in Cloud – Legal Issues in Cloud – Product Readiness for Cloud Services. Simple application using simulator.

References:
1. Rajkumar Buyya, James Broberg and Andrzej M.goscinski, "Cloud computing:
2. Principles and Paradigms", September 2010, John Wiley & Sons.
3. Michael Miller," Cloud Computing: Web -Based Applications That change the way You Work and Collaborate Online", First Edition, 2008, Pearson Education.
4. Ronald L. Krutz, Russell Dean Vines, Wiley "Cloud Security A comprehensive

Guide to secure Cloud Computing" Wiley.

5. Haley beard, " Cloud Computing best practices for managing and measuring processes for on-demand computing, applications and Data centers in the cloud with SLAs", July 2008, Emereo Pty Limit

6. *"Cloud Computing Implementation, Management and Security"* by John W. itinghouse james F.Ransome, CRC Press.

7. "Handbook of Cloud Computing" by Borko Furht. Armando Escalante, Springer

8. "Cloud Revolution" , by Charles Badcock McGrawhill.

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Semester -III
Elective Paper: Paper-XI (CS2313): Distributed Operating system

Unit I   (15)

Introduction to Distributed system: Goal, Hardware Concepts, Software concepts , Design issues

Communication in distributed system: Layered protocols , client server model , remote procedure call , group communication , Comparison of Client Server Vs. Distributed operating system.

Unit II   (15)

Synchronization in distributed system : Clock synchronization , mutual exclusion , election algorithms, automatic transaction , deadlocks in distributed systems.

Processes and processors in distributed systems: Threads , System models , Processor allocation , Scheduling in distributed systems . Introduction to Fault Tolerance and Real Time distributed systems.

Unit III   (15)

Distributed file system : Distributed file system, Design and Implementation trends in distributed file system . Distributed shared memory: Introduction to shared memory, consistency models , Introduction to Page based distributed shared memory and Shared- variable distributed shared memory, Object-based distributed shared memory.

Unit IV   (15)

Case study: Distributed Computing environment (DCE).

References:

1. Distributed Operating Systems: Andrew S. Tanenbaum, Pearson Education.

2. Distributed Operating Systems: Concepts and Design, Pradeep K. Sinha, PHI Learning

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Elective Paper : Paper-XI (CS2313): **Data Mining**

Unit I (15)

Introduction: Data mining concepts, Data mining functionalities, classification of data mining systems, Integration of data mining system with a database or data warehouse system, major issues in data mining

Data Preprocessing: aggregation, Sampling, Dimensionality reduction, Feature subset selection, Feature creation, discretization and Binarization, variable transformation.

Measures of similarity and dissimilarity: Basics, similarity and Dissimilarity between simple attributes, dissimilarities between data objects, and similarities between data objects, Simple matching coefficient, Jaccard Coefficient, Cosine similarity, Extended Jaccard Coefficient.

Unit II (15)

Classification: Preliminaries, general approach to solve classification problem, Decision tree induction, Rule-based classifier, Nearest-Neighbor classifier, Bayesian Classifiers, Support Vector Machine.

Unit III (15)

Association analysis: Problem definition, Frequent Itemset Generation, Apriori Principle, apriori algorithm, Maximal Frequent itemset, closed frequent itemset. FP-growth algorithm,. Sequential Patterns, Infrequent Patterns.

Unit IV (15)

Cluster analysis: Introduction, Types of Clustering, Types of Clusters. K-means algorithm, Agglomerative Hierarchical Clustering, DBSCAN, Prototype based clustering and Density based clustering.

Reference books:

1) Introduction to Data Mining – Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Pearson education.
2) Data Mining concepts and techniques --- Jiawei Han and Micheline Kamber , Elsevier
3) Data Mining: Introductory and Advanced Topics - Margaret H. Dunham, Pearson education

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Elective Paper- XI (CS2313): OPEN SOURCE SOFTWARES

UNIT I **15 hrs**

The FOSS R e v o l u t i o n - History of Free/Open Source and BSD Software - FOSS Licences ,Need of FOSS, Advantages of Open Sources and its applications . Open source operating system: LINUX: Introduction of kernel and shell , process, system calls, Linux file system, Basic Commands, File Permissions,vi editor, Shell programming.

UNIT II **15 hrs**

PHP Basics- Features, Embedding PHP Code in your Web pages, Outputting the data to the browser, Datatypes,Variables, Constants,expressions,string interpolation, control structures .Function,Creating a Function,Function Libraries,Arrays,strings and Regular Expressions.

Unit III **15 hrs**

Validating Data Entry – Form Handling – Cookies – Session Tracking,PHP and Web Forms, Files, PHP Authentication and Methodolgies -Hard Coded, File Based, Database Based, IP Based, Login Administration,Uploading Files with PHP, Sending Email using PHP,Building Web sites ,Updating Web sites Scripts.

Unit IV   **15 hrs**

MySQL: Getting Started with MySQL – Basic Data Types –Database and Table Creation – Performing Operations on Table Data – Running Calculations on Table Data – Grouping the Data – Functions in MySQL - Database Access with PHP and MySQL. Eclipse, an Integrated Development Environment.

Text Books:

1. UNIX Concepts & Applications Sumitabha Das (THM)
2. The Design of the UNIX Operating System Maurice J. Bach (Pearson Education)

3. T.V.Gopal, Open Source Software, Scitech Publications, Edition 2003
4. Dave W & others, Beginning PHP 5, Wiley-dreamtech, Edition 2004

5. The World of Scripting Languages, David Barron,Wiley India.
6. Beginning PHP and MySQL , 3rd Edition , Jason Gilmore,Apress Publications (Dream tech.).
7. Ivan Bayross, Sharanam Shah, MySQL 5 for Professionals, Shroff Publishers, Edition 2007.

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Semester -III
Paper-XII (CS2334): **Software Project Management (CBCS)**

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   Unit-I: Project Management: **(15)**

      Concept of project Management, Project Organization, Planning a software project, Project management life cycle, Risk management, Identification of Risks, Risk Analysis, Risk Planning and Monitoring.

   Unit-II: Software Project Estimation: **(15)**

Concept of Project Estimation, Different methods of software project estimation (COCOMO model, Delphi cost estimation etc.), Function point analysis, Software Project Management Tools and Techniques- PERT & Gantt Charts

Unit-III: Software Quality Management and Testing: **(15)**

Quality Assurance and Standards, Quality Planning, Quality control, Role of testing in Software, development, Testing Procedure, Defect Management.

Unit-IV: Configuration Management (CM):   **(15)**

CM planning, Change, Management, Version and Release, Management, Configuration, Management Tools. S/W Team Management-Characteristics of Performance management, High performance Directive and, collaborative styles, Team Structure, Team Communication, Managing customer expectations, Group Behavior.

Reference:

1. Software Project management By Edwin Bennatan
2. Software Engineering By Roger S. Pressman
3. Software Engineering concepts by Richard Fairley
4. Software Project Management by S.A. Kelkar
5. Software Engineering by IAN Sommerville
6. System Analysis and Design Methods By J.L Whitten , L.D.Bentley and K.C. Dittman