Draft Syllabus of IT Subjects

Rayat Shikshan Sanstha's Sadguru Gadage
Maharaj College ,Karad
(An Autonomous College)

Name of the Progarmme : M.Com. I.T.II	**Semester – III**

Name of the Course (Subject): Advance Database Technology **Course Code:** DSE-3

Semester End Exam (SEE) 80 Marks	**Continuous Comprehensive Evaluation (CCE) 20**	**Total Marks 100**	**Credit Assigned - 04 Workload – 4 Hrs Per Week**

Introduced from June 2023

Course Outcomes	The students of this course will be able to: • Identify the nature of data and need of database for an organization. • Design relational database to store organizational data properly. • Examine the different emerging database models in an organization. • Compare and select appropriate database model for an organization.

Marks: 80	**Hours of Teaching: 60**	**Theory: 40**	**Practical: 20**

Unit I **a)Theory**	**RELATIONALDATABASESANDADVANCEDSQL** The relational database model: tables, keys, integrity constraints, operators, primary key selection and functional dependencies, ER Modeling: Types of Entities, Relationships, Developing an ER Diagram. Advanced SQL: SQL functions, cursors, triggers, stored procedures, Embedded SQL. Indexing and Query Optimization	**10**
b)Practical	Case study based on Payroll system for preparing ER Diagram including database design and practical assignments based on cursor and trigger.	**05**
Unit II **a)Theory**	**OBJECT ORIENTED DATABASES** The extended entity relationship (EER) model: generalization, specialization, Concepts for Object Oriented Databases: Object Identity, Object structure, Type Constructors, Encapsulation of Operations, Inheritance, Object Database Standards, Languages and Design: ODMG Model, ODL, OQL.	**10**
b)Practical	Case study based on College Admission System for preparing EER diagram including designing of Object oriented database for the same	**05**
Unit III **a)Theory**	**NoSQL Database** Introduction to NoSQL Introduction to NoSQL database, Types of NoSQL database, NoSQL data modeling, Benefits of NoSQL database, Comparison between SQL and NoSQL database system, NoSQL using MaongoDB. Basic data types, Running the MongoDB shell, MongoDB Client, ,Basic operations with MongoDB shell, Arrays, querying with MongoDB	**10**
b)Practical	Case study based on MongoDB database system for Inventory System of any manufacturing organization.	**05**
Unit IV **a)Theory**	**XMLANDEMERGINGDATABASEMODELS** XML Databases: Structured unstructured and semi structured data, XML hierarchical Data Model, XML Document DTD and XML Schema, XMLQuery.EmergingDatabaseModel:MultimediaDatabase,TemporalDatabases, Database on the World Wide Web, GIS Data Operations, Digital Libraries.	**10**
b)Practical	Case study based on usage of xml database by hotel price comparison web Sites (TripAdvisor, Trivago etc.)	**05**

Reference Books-

1. Database system concept: Korth, Silberschatz and Sudarshan, MGH,5th edition
2. SQL/PLSQL For Oracle11G, Black Book, Dr. Deshpande, Wiley Dreamtech 2012
3. SQL,PL/SQL the programming language of Oracle, Ivan Bayross, BPB
4. Professional NoSQL, Shashank Tiwari, 2011, Wiley

5. Teach yourself NoSQL with MongoDB in 24 Hours, Brad Dayley, Sams
6. Beginning XML Databases, Gavin Powell, Wliey Publishing, 1st Edition
7. Designing XML Databases -Paperback, by Mark Graves Prentice Hall PTR, 2001

Web Resources

https://www.slideshare.net/Jasour/advanced-database-lecture-nores
https://edutechlearners.com/advance-database-management-system-notes/
http://ecomputernotes.com/database-system/adv-database

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Name of the Progarmme : M.Com. I.T.II	**Semester – III**

Name of the Course (Subject): Emerging Trends in Web Technology **Course Code:** DSE-4

Semester End Exam (SEE) 80 Marks	**Continuous Comprehensive Evaluation (CCE) 20**	**Total Marks 100**	**Credit Assigned - 04 Workload – 4 Hrs Per Week**

Introduced from June 2023

Course Outcomes	The students of this course will be able to: 1. Identify web application development technique through the framework of Web 2.0. 2. Design and develop a modern web application solution using Rich Internet Applications 3. Compare the benefits of jQuery over traditional web techniques. 4. Analyze emerging web technologies and applications through Semantic Web.

Marks: 80	**Hours of Teaching: 60**	**Theory: 40**	**Practical: 20**

Unit I **a)Theory**	**Introduction to Web 2.0** Introduction to Web 2.0, Characteristics of Web 2.0 Technologies, Differentiating Web 1.0 and Web 2.0, Web 2.0 Technologies: Blog, Wiki, Social Bookmarking, Social Networking. Application Domains of Web 2.0: Business Applications, Educational Applications, Medical and Health Applications, Merits and demerits of Web 2.0.	**10**
b)Practical	Case study on Educational Applications based on Web2.0 technology	**05**
Unit II **a)Theory**	**Rich Internet Application** Introduction to Rich Internet Application, Features of Rich Internet Application, Framework of Rich Internet Application, Advanced Technologies used in Rich Internet Application: AJAX, JSON, AngularJS. Benefits of Rich Internet Application, Limitations of Rich Internet Application.	**10**
b)Practical	Case study based on benefits of Rich Internet Application for Manufacturing Organization	**05**
Unit III **a)Theory**	**Introduction to jQuery** JQuery Introduction, jQuery Syntax, jQuery Selectors, jQuery Events, jQuery Effects, jQuery and HTML contents, jQuery and CSS Classes, Working with jQuery and AJAX.	**10**
b)Practical	Case study based on usage of jQuery by Microsoft in its different products	**05**
Unit IV **a)Theory**	**Semantic Web** Introduction to Semantic Web: semantic web approach, benefits of semantic web, Characteristics of Semantic Web, building blocks of Semantic Web, Semantic Modeling, Resource Description Framework (RDF), Semantic Web Applications.	**10**
b)Practical	Case study on E-Commerce applications based on Semantic Web.	**05**

Reference Books-

1. Web 2.0 Architectures, James Governor, Dion Hinchcliffe, Duane Nickull, O'Reilly
2. Web 2.0 Mash-ups and the New Aggregators, O'Reilly
3. Professional Rich Internet Applications: AJAX and Beyond, Dana Moore, Wrox
4. Learning from jQuery: Building on Core Skills, 2013, Callum Macrae, O'Reilly
5. Developing Enterprise Web Services: An Architect's Guide, Sandeep Chatterjee, James Webber, Prentice Hall
6. The Semantic Web: A Guide to the Future of XML, Web Services, and Knowledge Management , Michael C. Daconta, Leo J. Obrst, Kevin T. Smith, Wiley

Suggested Additional Reading:

1. Richardson, Will (2010). Blogs, Wikis, Podcasts, and Other Powerful Web Tools for Classrooms. Corwin Press. p. 171. ISBN 978-1-4129-7747-0
2. Pal, Surendra Kumar. "Learn More About Web 2.0". academia.edu.
3. O'Reilly, T., 2005. What is Web 2.0. Design Patterns and Business Models for the Next Generation of Software, p. 30
4. Berners-Lee, Tim; James Hendler; OraLassila (May 17, 2001). "The Semantic Web" (PDF). Scientific American. 410 (6832): 1023–4.

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Name of the Progarmme : M.Com. I.T.II	**Semester – IV**

Name of the Course (Subject): Data Analytics **Course Code:** DSE-5

Semester End Exam (SEE) 80 Marks	**Continuous Comprehensive Evaluation (CCE) 20**	**Total Marks 100**	**Credit Assigned - 04 Workload – 4 Hrs Per Week**

Introduced from June 2023

Course Outcomes	The students of this course will be able to: 1. Identify the importance and different types of data analytics required for organizations. 2. Analyze the different techniques of Text Analysis. 3. Evaluate the role of different data mining techniques used for Data Analytics 4. Apply different advanced tools available in Excel for Data Analytics

Marks: 80	**Hours of Teaching: 60**	**Theory:40**	**Practical: 20**

Unit I a)Theory	**Data Analytics Basics:** Definition of analytics, Evolution of analytics, Need of Analytics, Data analytics vs data analysis, Data Analytics vs Data Science, Introduction to Data Analyst, Types of Data Analytics, Tools for Data Analytics. Importance of data analytics, Differences between data, information and knowledge and data maturity.	**10**
b)Practical	Case study based on different types of Data Analytics with their importance in share trading.	**05**
Unit II a)Theory	**Data Mining:** Types of Data, Introduction to data mining - Definition and functionalities, Classification and Prediction - Issues Regarding Classification and Prediction – Classification by Decision Tree, Mining Frequent Patterns, Association Rules, Machine Learning Algorithms" Supervised and Unsupervised learning, Cluster Analysis: Types of Data in Cluster Analysis, K-Means Analysis.	**10**
b)Practical	Case study based on any one of the data mining techniques for market analysis.	**05**
Unit III a)Theory	**Advanced Data Analytics** **Text Analytics:** Natural language basics, Processing and understanding text, Text Summarization, Text similarity and Clustering, Text classification, Semantic and Sentiment analysis.	**10**

	Image Analytics: Introduction to image classification and analysis, Image features, Image segmentation, Applications of Image analysis, Introduction to softwares for image processing.	
b)Practical	Case study based on Text Analysis using Semantic analysis for identifying market potentials for organizations	**05**
Unit IV **a)Theory**	**Advanced Excel for Data Analytics:** Sort and filter, Charts: Skewness, kurtosis, Box Plot, Conditional formatting, Importing data and text to columns, Functions: Mathematical, String functions, IF, AND, OR, Searching: match, search, vlookup, Dates, Misc, Pivot tables	**10**
b)Practical	Case study based on Data presentation for sales data analysis (Year, Region and product wise) using pivot table.	**05**

Reference Books-

1. Data Analytics: Principles, Tools and Practices: Dr. Gourav Aroraa, bpb publications

2. Data Analytics: Anil Maheshwari, McGraw Hill Publications.

3. Data Mining Techniques: Arun K. Pujari, The Orient Blackswan

4. Machine Learning for beginners: Aldrich Hill, Notion Press

5. Advanced Excel with VBA Macros: Swaroop Das, Blue Rose Publications, 1st edition 2020

Web Resources

1. https://www.simplilearn.com/what-does-a-data-analyst-do-article

2. https://www.investopedia.com/terms/d/data-analytics.asp

3. https://www.mastersindatascience.org/learning/what-is-data-analytics/

4. https://developers.google.com/machine-learning/crash-course

5. https://www.tutorialspoint.com/advanced_excel/index.htm

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Name of the Progarmme : M.Com. I.T.II	**Semester – IV**

Name of the Course (Subject): Mobile Applications **Course Code:** DSE-6

Semester End Exam (SEE) 80 Marks	**Continuous Comprehensive Evaluation (CCE) 20**	**Total Marks 100**	**Credit Assigned - 04 Workload – 4 Hrs Per Week**

Introduced from June 2023

Course Outcomes	The students of this course will be able to: 1. Understand the building blocks of Mobile Operating Systems 2. Identify various components of Android architecture for mobile Applications. 3. Apply Android Application Framework for developing mobile Applications. 4. Analyze different security threats for android mobile applications.

Marks: 80	**Hours of Teaching: 60**	**Theory: 40**	**Practical: 20**

Unit I **a)Theory**	**Mobile Operating System** Introduction to Mobile operating System, Mobile operating system structure, Constraints and Restrictions, Features: Multitasking Scheduling, Memory Allocation, File System Interface, Keypad Interface, I/O Interface, Multimedia features, Characteristics of Mobile Applications. Comparison between Android, Windows and IoS.	**10**
b)Practical	Case study on identifying characteristics of Mobile Applications	**05**
Unit II **a)Theory**	**Android Architecture and Framework** Android versions and its features, Architecture & Environment: SDK, Android Development Tools, Android Virtual Devices, Emulators, Dalvik Virtual Machine, Android Directory Structure. UI components: TextView, Buttons, Check Boxes and Radio Groups, Spinner, DatePicker, TimePicker. Android Menu: Option Menu, Context Menu, Popup Menu.	**10**
b)Practical	Case study based on analyzing different UI components used in different Mobile Applications.	**05**
Unit III **a)Theory**	**Android Framework** Activity: Activity Lifecycle, Activity Example, View: GridView, WebView, ScrollView. Layout Manager: Relative Layout, Linear Layout, Table Layout, Grid Layout. Intent: Overview, Implicit Intents, Explicit Intents, Intents with Activities. Location API: Location API Fundamental, Example of Android Location API, Working with Google Maps.	**10**
b)Practical	Case study on Mobile applications based on usage of Location API and Google Maps.	**05**
Unit IV **a)Theory**	**Android Security** Mobile application threats: Working of mobile applications, Client-side vulnerabilities, Server-side vulnerabilities, Mobile application threats, Risks for users. Android Security: System Level Security, Application Security,	**10**

	Application Security measures, Application Security Scans	
b)Practical	Case study based on identifying mobile application vulnerabilities and suggesting security measures.	**05**

Reference Books–

1. Android, P.K. Dixit, Vikas Publication

2. Android Application Development – Black Book Pradip Kotari, Dreamtech

3. Composing Mobile Apps Learn, Explorer, Apply using Android Anubhav Pradhan, Anil Deshpande, Wiley. 4. Android Wireless Application Development By Lauren Darcey, Pearson Education, 2nd Edition.

5. Unlocking Android Developer's Guide By Frank Ableson and Charlie Collins and Robi Sen, Manning Publication Co.

6. Android Security Internals: An In-Depth Guide to Android's Security Architecture 1st Edition, Elenkov Nikolay, No Starch Press

Web Resources

https://www.ibm.com/topics/mobile-application-development

https://www.netsolutions.com/hub/mobile-app-development

https://developer.android.com/courses/android-basics-compose/course

https://medium.com/@amritlalsahu5/how-to-develop-a-secure-android-app-b4ec103ece8c