# Academic Session March-2023

# Syllabus- BCA (6<sup>th</sup> Semester)

| Course Code | Course Title | Credits | Th/ Th-P/P/Pro |
|---|---|---|---|
| OBC601 | Data Mining and Warehousing | 3 | Theory |
| OBC602 | Web Technologies | 3 | Theory |
| OBC621 | Web Technologies Lab | 2 | Practical |
| OBC671 | Project Work | 10 | Project |

# Data Mining and Warehousing

| Course Code: OBC 601 | Course Title: Data Mining and Warehousing (3 Credits) |
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**Course Objective: -**

- ➢ Understand the concepts and role of data warehousing and enterprise intelligence in IT industry.

- ➢ Summarize the dominant data Warehousing Architectures and their support for quality attributes.

- ➢ Recognize and describe at least three computational approaches to data clustering, taking cognizance of the contribution of paradigms from the fields of Artificial Intelligence and Machine learning.

- ➢ Compare and contrast the dominant data mining algorithm.

- ➢ Understand the advanced features of data mining algorithms.

## Course Contents

| Sr. No. | Unit No./ Unit description | Unit Objectives |
|---|---|---|
| 1 | Unit 1- Introduction to Data Mining: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining. | Students will be able to understand and evaluate the basic concepts of data mining and can apply concepts of data mining in information technology applications within organizations. |
| 2 | Unit 2- Introduction to Data Warehouse: Definition, Data Warehousing Components, building a Data Warehouse, Mapping the Data Warehouse to a Multiprocessor Architecture, Difference between Database System and Data Warehouse. | Students will be able to understand the concept of data Warehouse and differentiate it with database. |
| 3 | Unit 3- Multi-dimensional data Model: Data Cubes, Stars, Snowflakes, Fact Constellations, Concept hierarchy, Process Architecture, 3 Tier Architecture, Data warehouse Measures, their categorization and computation, Operations in OLAP, Advantages of OLAP over OLTP. | Students will be able to implement the concepts of multidimensional data Model in real life applications. |
| 4 | Unit 4- Data Pre-processing: Need for pre-processing Descriptive data summarization | Students will be able to understand need of data pre- |

| | | processing before it can be used for analysis. |
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| 5 | Unit 5- Data Cleaning: Missing Values, Noisy Data, (Binning, Clustering, Regression, Computer and Human inspection), Inconsistent Data, Data Integration and Transformation | Students will be able to implement various data cleaning and data integration techniques. |
| 6 | UNIT 6- Data Mining Primitives: Task-relevant data, mining objective, measures and identification of patterns, KDD versus data mining, data mining tools and applications. | Students will be able to understand the objective of doing data mining. |
| 7 | Unit 7- Data Mining Query Language: Data specification, specifying kind of knowledge, hierarchy specification, pattern presentation & visualization specification, data mining languages and standardization of data mining, Architectures of Data Mining Systems. | Students will be able to write queries to implement the concepts of data mining. |
| 8 | Unit 8- Data Mining Techniques (Association Rules): Association rules from transaction database & relational database, Apriori algorithm and correlation analysis. | Students will be able to understand and implement the association rules on real life applications. |
| 9 | Unit 9- Data Mining Techniques (Classification and predication): Issues related to classification & prediction, decision tree induction, Bayesian classification. Classification methods K-nearest neighbour classifiers | Students will be able to understand and implement the classification and prediction rules on real life applications |
| 10 | Unit 10- Data Mining Techniques (Clustering techniques): Data types in cluster analysis, categories of clustering techniques: partition method, and Hierarchical method. | Students will be able to understand and implement the clustering techniques on real life applications |
| 11 | Unit 11- Overview of Advanced Features of Data Mining: Mining complex data objects, Spatial databases, Multimedia databases | Students will able to understand the different and advanced concepts of data mining. |
| 12 | Unit 12- Overview of Advanced Features of Data Mining: Time series and Sequence data; mining Text Databases and mining Word Wide Web. | Students will able to understand the different and advanced concepts of data mining. |

**References: -**

- Alex Berson and Stephen J. Smith, "Data Warehousing, Data Mining & OLAP", TataMcGraw – Hill Edition, 2007.
- Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Third Edition, Elsevier, 2012.

# Web Technologies

| Course Code: OBC 602 | Course Title: Web Technologies (3 Credits) |
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**Course Objective: -**

➢ Gain the knowledge of Protocols, Websites and Web Applications.

➢ Analyse a web page and identify its elements and attributes.

➢ Design a basic web site using HTML and CSS to demonstrate responsive web design.

➢ Build well-formed XML Document.

➢ Create and build dynamic web pages using JavaScript (client side programming).

➢ Design and create simple web application using server side PHP programming and Database Connectivity using MySQL.

## Course Contents

| Sr. No. | Unit No./ Unit description | Unit Objectives |
|---|---|---|
| 1 | Unit 1- Introduction to Internet and Protocols: History of the Internet and World Wide Web, Gopher, HTML Protocols – HTTP, SMTP, POP3, MIME, IMAP, Telnet, Load Balancing. | Students will be able to understand and evaluate the basic concepts of Internet and protocols. |
| 2 | Unit 2- Deploying server: Web server and Application server, Email Server, FTP, ISP, URL address, DNS. Static VS Dynamic Websites and Website VS Web Applications. | Students will be able to understand the importance of server, websites and web applications. |
| 3 | Unit 3- Introduction of HTML: What is HTML, how to write HTML, HTML Building blocks, Tags, Attribute, Elements, Formatting Tags, Breaking rule, Horizontal rule. | Students will be able to describe and design about HTML web pages. |
| 4 | Unit 4- Web Page Designing: Heading, Paragraph, Anchor Tag, Image, Table, List, Linking, Frame, form. | Students will be able to create and design static web pages. |
| 5 | Unit 5- Introduction of HTML 5: Introduction of HTML 5, History of HTML 5, HTML 5 Tags, HTML 5 Elements, HTML 5 Events. | Students will able to implement HTML 5 to make web pages more attractive. |
| 6 | UNIT 6- CSS: Introduction of CSS, CSS Selectors, Types of CSS, Box Model, Pseudo Class, Pseudo Element, CSS Properties. | Students will able to create, apply, and design the style characteristics. |

| 7 | Unit 7- XML: What is XML, Why XML, Features of XML, Pros and cons of XML, Tree, DOM, and DTD? | Students will able to evaluate and apply wide variety of applications. |
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| 8 | Unit 8- JavaScript Basics: Introduction of JavaScript, Pros and Cons of JavaScript, Variable, Data types, Operators, Internal and External JavaScript, Expressions, Loops, and Function. | Students will able to understand, evaluate, and apply the basics of Scripting. |
| 9 | Unit 9- JavaScript Objects: Object, Array, String, Date, Number, Boolean, Window, History, Navigator, and Screen. | Students will able to understand, evaluate and apply Objects to make web applications more reliable. |
| 10 | Unit 10- JavaScript DOM: What is DOM, Why DOM, Methods of DOM, innerHTML, Validation using DOM.? | Students will able to understand and evaluate the components of DOM to create dynamic web pages. |
| 11 | Unit 11- PHP Introduction: PHP basics, Installation of PHP, Echo, Variable, and Data types, Operators, Constants, Expressions, Loops, Array, Functions. | Students will able to understand and evaluate that how PHP will work? |
| 12 | Unit 12- Advance PHP: PHP form, Include, Cookie, Session, Data Storage using MySQLi. | Students will be able to create, analyse, design and implement the form with database part to make web page attractive and dynamic. |

References: -
➢ Laura Lemay, Rafe Colburn, Jennifer Kyrnin, "Mastering HTML, CSS, & JavaScript Web Publishing", BPB Publications, 2016.
➢ Luke Welling, Laura Thomson, "PHP and MYSQL Web Development", Addison Wesley, 2016.
➢ Kogent Learning Solutions Inc., "Web Technologies Black Book", Dreamtech Press, 2009.
➢ DT Editorial Services, "HTML 5 Black Book", Dreamtech Press, 2016.
➢ Steave Holzner, "PHP: The Complete Reference", McGraw Hill Education", 2017. .