Shri Vaishnav Vidyapeeth Vishvavidyalaya, Indore
Shri Vaishnav Institute of Computer Applications

Name of Program: BCA with Specialization in Big Data Analytics in Association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA601	Compulsory	Advanced Java	3	1	0	4	60	20	20	0	0

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
*__Teacher Assessment__ shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall exceed 10 Marks)

Course Education Objectives (CEOs):

This course covers the implementation of advanced program designs with the tools available in the Java programming language. After a detailed review of the fundamentals, advanced topics will include the Graphical User Interface (GUI) for applications, 2D graphics, multimedia, multithreading and client-server models for networking and database connectivity. If time and interest permits, the class may introduce the Java tools for generics and collections.

Course Outcomes (COs):

Students will build on their understanding of Object-Oriented Design (OOD) and Programming (OOP) in Java and learn to write robust, Graphical User Interface (GUI) applications and applets. Students will gain a practical familiarity with 2D graphics, multimedia, programming for concurrency, networking and database connectivity. Students may investigate programming for Web Services, if time and interest permits.

Syllabus:

UNIT – I

Java Networking: Network Basics and Socket overview, TCP/IP client sockets, URL, TCP/IP server sockets, Datagrams, java.net package Socket, ServerSocket, InetAddress, URL, URLConnection.

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BCCA601	Compulsory	Advanced Java	3	1	0	4	60	20	20	0	0

JDBC Programming: The JDBC Connectivity Model, Database Programming: Connecting to the Database, Creating a SQL Query, Getting the Results, Updating Database Data, Error Checking and the SQLException Class, Statement Interface, PreparedStatement, CallableStatement, ResultSet Interface, Updatable Result Sets, JDBC Types, Executing SQL Queries, Executing SQL Updates.

UNIT - II

Servlet API and Overview: Servlet Model: Overview of Servlet, Servlet Life Cycle, HTTP Methods Structure and Deployment descriptor ServletContext and ServletConfig interface, Attributes in Servelt, Request Dispatcher interface The Filter API: Filter, FilterChain, Filter Config Cookies and Session Management: Understanding state and session, Understanding Session Timeout and Session Tracking, URL Rewriting.

UNIT – III

Java Server Pages: JSP Overview: The Problem with Servlets, Life Cycle of JSP Page, JSP Processing, JSP Application Design with MVC, JSP Directives, JSP Action, JSP Implicit Objects, JSP Form Processing, JSP Session and Cookies Handling, JSP Session Tracking JSP Database Access, JSP Standard Tag Libraries, JSP Custom Tag, JSP Expression Language, JSP Exception Handling, JSP XML Processing.

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BCCA601	Compulsory	Advanced Java	3	1	0	4	60	20	20	0	0

UNIT – IV

Java Server Faces2.0: Introduction to JSF, JSF request processing Life cycle, JSF Expression Language, JSF Standard Component, JSF Facelets Tag, JSF Convertor Tag, JSF Validation Tag, JSF Event Handling and Database Access.

UNIT – V

Hibernate4.0: Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Hibernate O/R Mapping, Hibernate Annotation.

Java Web Frameworks: Spring MVC: Overview of Spring, Spring Architecture, bean life cycle, XML Configuration on Spring, Aspect – oriented Spring, Managing Database, Managing Transaction

Text Books:

1. Patrick Naughton and HerbertzSchildt, "Java-2: The Complete Reference", TMH, 7th edition, 2002.
2. Jim Keogh, "J2EE: The complete Reference", McGraw-Hill Education (India) Pvt Limited, Edition 1.
3. Rick Darnell, "HTML 4 unleashed", Techmedia Publication, 2000
4. Paul Dietel and Harvey Deitel, "Java How to Program", PHI, 8th edition, 2010.

Reference Books:

1. E. Balagurusamy, "Programming with Java: A Primer", TMH, 1998.
2. N.P. Gopalan and J. Akilandeswari, "Web Technology- A Developer's Perspective", PHI, 2nd edition
3. Eric Jendrock, Jennifer Ball, Debbei Carson, "The Java EE5 Tutorial", Pearson, 3rd edition, 2007.

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							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA602	Compulsory	Internet Programming	3	1	0	4	60	20	20	0	0

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class activities, given that no component shall exceed more than 10 marks

Course Education Objectives (CEOs):

- The goal of this course is to know & understand concepts of internet programming.

Course Outcomes (COs): Students will be able to understand:

- Java programming concepts
- JAVA and HTML tools for Internet programming.
- Scripting languages – Java Script.
- Dynamic HTML programming.
- Server Side Programming tools.

Syllabus:

UNIT-I

Java programming: An overview of Java, Data Types, Variables and Arrays, Operators, Control Statements, Classes, Objects, Methods, Inheritance, Packages, Abstract classes, Interfaces and Inner classes, Exception handling, Introduction to Threads, Multithreading, String handling, Streams and I/O, Applets.

UNIT-II

HTML: Introduction to HTML, WWW and WC, Basic HTML Structure, Common HTML Tag, Physical and Logical HTML, Types of Images, client side and server-side Image, mapping, List, Table, Frames, Embedding Audio, Video, HTML form and form elements, Introduction to HTML Front Page.

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BCCA602	Compulsory	Internet Programming	3	1	0	4	60	20	20	0	0

UNIT-III

CSS (Cascading Style Sheets): Introduction to style sheet, Types of style sheet, Style sheet property, Positioning with style sheet.

UNIT-IV

JAVA Script: Introduction to Java Script, Identifier & operators, control structures, functions Document Object Model (DOM), DOM Objects (window, navigator, history, location), Predefined functions, numbers and string functions, Array in Java scripts, Event handling in Java script.

UNIT-V

Active Server Pages (ASP)

HTTP basics. Introduction to ASP, Working with personal web server and IIS. Writing simple ASP pages, Request & Response object, Application and session object. ASP and database, Error handling.

Text Books:

1. Php, Mysql and Apache – Julie c. Meloni, Sams publishing,Fifth Edition,(8June 2012)
2. Introduction to Internet and HTML scripting – Bhaumik Shroff ,Ahmedabad Books India,Third Edition
3. Web Technology and design – C Xavier, New Age International,2007
4. Beginning HTML and CSS-Rob Larsen,2013
5. Learning PHP, MySQL, Javascript, CSS and HTML-Robin Nixon,Fourth Edition
6. Java For Dummies-Barry Burd
7. ASP. NET 4.5 IN Simple Steps by Kogent Learning Solutions,2013

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BCCA602	Compulsory	Internet Programming	3	1	0	4	60	20	20	0	0

Reference Books:

1. Internet and Java Programming by R. Krishnamoorthy & S. Prabhu, New Age International Publishers,1 Jan 2002
2. ASP .Net- The Complete Reference by Matthew Macdonald, 1 July 2017
3. HTML & CSS: The Complete Reference-Thomas A Powell, Mcgraw Hill, Fifth Edition
4. HTML, JavaScript, DHTML and PhP – Ivan Bayross, Fourth Edition
5. Java-The Complete Reference by Herbert Schildt,1 November 2017
6. HTML & CSS Design and Build Websites -Jon Ducket,18 November 2011
7. The Essential Guide to CSS and HTML Web Design-Craig Grannell, Apress,Third Edition,9 March 2008

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							THEORY		PRACTICAL		
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BTIBDA501	**UG**	**Predictive Analytics**	2	1	0	3	60	20	20	0	0

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:

1. Understand the evolution and relevance of Analytics in the world today.
2. Explore end-to-end analytics industry use cases using the data analytics lifecycle.
3. Understand the scientific method for analytics, use cases, and the analytics team key roles.
4. Acquire technical expertise using popular open source analytics frameworks including Jupyter notebooks and Python.
5. Gain a competitive edge using low-code cloud-based platform for Analytics using IBM Watson Studio.
6. Data engineering and data modeling practices using machine learning.
7. Explore data science industry case studies: transportation, automotive, human resources, aerospace, banking and healthcare.
8. Experience teamwork agile industry practices using design thinking.
9. Engage in role-playing challenge-based scenarios to propose real-world solutions.

Course Outcomes:

1. Illustrate the interaction of multi-faceted fields like data mining, statistics and mathematics in the development of Predictive Analytics.
2. Acquaint the student with the concepts of Ordinary Least Squares & Generalized Least Squares.
3. Explain data clustering and dimension reduction techniques

SYLLABUS

Shri Vaishnav Vidyapeeth Vishvavidyalaya, Indore
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COURSECODE	CATEGORY	COURSENAME	L	T	P	CREDITS	TEACHING&EVALUATIONSCHEME				
							THEORY		PRACTICAL		
							ENDSEM University Exam	TwoTermExam	TeachersAssessment*	ENDSEM University Exam	TeachersAssessment*
BTIBDA501	**UG**	**Predictive Analytics**	2	1	0	3	60	20	20	0	0

Unit 1

Introduction to Analytics with: Use Cases Analytics Overview, Domains, Roles, Data Analytics in Practice, Methodologies, Methods, Integrated Environment for Analytics projects, Cloud Based Analytics Lifecycle, Analytics capabilities on the cloud.

Unit 2

Explore and Prepare Data: Business Understanding, Explore Data, Prepare Data, Understanding Data, Statistics and Representation Techniques, Data Transformation, Represent and transform Unstructured Data, Data Transformation Tools.

Unit 3

Data Visualization and Presentation: Decision-centered visualization, Fundamentals of Visualization, Common graphs, Common tools.

Unit 4

Data Modeling and Machine Learning Algorithms: Overview of modeling techniques, Machine Learning techniques, Accuracy Precision & recall, Model Deployment.

Unit 5

Machine Learning Algorithms: About Machine Learning, From Regression to neural nets, Decision tree classifier, Machine learning Framework.

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BTIBDA501	**UG**	**Predictive Analytics**	2	1	0	3	60	20	20	0	0

References:

1. https://developer.ibm.com/articles/cc-beginner-guide-machine-learning-ai-cognitive/
2. http://bigdatauniversity.com/bdu-wp/ bdu-course/data-science-methodology
3. Wikipedia, “Cross Industry Standard Process for Data Mining,” http:// en.wikipedia.org/wiki/Cross_Industry_Standard_Process_for_Data_ Mining, http://the-modeling-agency.com/crisp-dm.pdf
4. https://www.ibm.com/blogs/business-analytics/descriptive-analytics-101-what-happened/
5. https://www.weforum.org/agenda/2015/02/a-brief-history-of-big-data-everyone-should-read/
6. https://medium.com/ibm-watson/introducing-ibm-watson-studio-e93638f0bb47
7. https://keyskill-clms.mylearnerportal.com/mod/lesson/view.php%3Fid=2808
8. https://www.ibm.com/design/language/experience/data-visualization/

List of Practical:

1. Accessing IBM Cloud: Create an IBM account and Navigate to Catalog.
2. Implementing Data Assets from files from your local system, including structured, unstructured data and Images
3. Implementing Data Cleaning, analyzing and reshaping of data.

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							ENDSEM University Exam	TwoTermExam	TeachersAssessment*	ENDSEM University Exam	TeachersAssessment*
BTIBDA501	**UG**	**Predictive Analytics**	2	1	0	3	60	20	20	0	0

4. Visualize preliminary data wrangling result.
5. Implement below hypothesisHypothesis1: Loss Claim After Expired Policy

   Hypothesis2: Loss Claim After Expired License

   Hypothesis3: Excessive (Over $10,000) Claim Amount
6. Hands on to implement Data Refinery Visualization using Claim Datasets
7. Hands on Lab for building and deploy models using AutoAI.
8. Hands on Lab of Auto Insurance Fraud Analyzed using Jupyter Notebook.
9. Hands on Lab to Analyze Bank Datasets and Hands on Hidden Facebook Usage.
10. Implementing Prediction of wildfire Intensity.

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							THEORY			PRACTICAL	
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BCCAIBM601	Compulsory	Cyber Security	4	1	0	5	60	20	20	0	0

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Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall exceed 10 Marks)

Course Education Objectives (CEOs):

1. To providethe detailed knowledge of security and to protect your organization against cyber threats.
2. To familiarize with the Network and Mobile security, IOT, Cloud security and Security Intelligence and SOC.

Course Outcomes (COs):

1. Understanding steps you can take to protect your organization against cyber threats and exploring.
2. Analyze the working mechanism of tools used by penetration testers and ethical hackers (network CLI tools, Telnet, SSH, Nmap, Wireshark, and many others).
3. Leverage high-end security enterprise solutions in high demand and many other top security tools and to gain real-world practice on critical threat modeling methodologies and frameworks such as MITRE, Diamond, IBM IRIS, IBM Threat Hunting, and security intelligence approaches to threat management.

.Syllabus:

Shri Vaishnav Vidyapeeth Vishvavidyalaya, Indore
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BCCAIBM601	Compulsory	Cyber Security	4	1	0	5	60	20	20	0	0

UNIT – I

Cyber Security Landscape – Cyber Resilience:

Understand the current impact of cyber security threats: Research global cyber security trends in different geographies, familiarize with the taxonomy of cyber-attacks, Explore the enterprise cyber security domains, Explore the most frequently targeted industry sectors including: Government, Energy and Utilities, Retail and Telecom Explore the cyber resilience framework understand the cyber resilience lifecycle.

UNIT – II

Threat Intelligence and Network Security

Understand the need for a cyber-threat hunting approach: Explore cyber-attack adversary frameworks,Investigate enterprise threat protection methods, Explore industry case studies, Understand how cyber criminals use networks in the dark web to perform illicit crime activities, Learn network protection practices like DNS, VPN, Understand enterprise network security practices through the analysis of an advanced persistent threat.

Mobile and IOT Security: Explore the mobile and IoT global phenomena: Understand mobile and IoT attack surface, Explore recent most threatening IoT cyber-attack scenarios, Learn to protect your home and organization with endpoint protection practices.

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BCCAIBM601	Compulsory	Cyber Security	4	1	0	5	60	20	20	0	0

UNIT – III

Application Security and Data Security:

Understand the wide adoption of industry applications: Learn web application fundamentals, Investigate application security practices, Examine the anatomy of the most dangerous applications threats, Understand the impact of data breaches and ransomware in Government and Health sectors: Research the anatomy and impact of Insider Threat and Phishing cyber-attacks, Research the anatomy and impact of Ransomware and Cyber Fraud cyber-attacks, Explore a Healthcare end-to-end industry case study.

UNIT – IV

Cloud Security:

Understand the reason of the global enterprise adoption of cloud computing: Understand the cloud security challenges brought by an integrated data, network, access infrastructure, Review the key cloud security practices for the enterprise, Explore a Telco cloud data breach scenario.

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BCCAIBM601	Compulsory	Cyber Security	4	1	0	5	60	20	20	0	0

UNIT – V

Security Intelligence and SOC:

Understand the drivers behind the enterprise adoption of Security Intelligence methods and tools: Explore the characteristics of Security Information and Event Management (SIEM) platforms, Explore SIEM in Action through a real-life Phishing attempt scenario. Understand the Incident Response and Threat hunting practice: Explore the benefits of establishing a SOC (Security Operation Center), understand the roles and responsibilities of SOC Operations team.

Text Book:

5. IBM Corporation, "Cyber Security Practitioner", IBM, 2020.

Reference Book:

IBM Corporation, "IBM QRadar SIEM Foundations", IBM, 2017.

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							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA615	Elective	Advanced DBMS	4	0	0	4	60	20	20	0	0

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Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To familiarize the students with the need and scope of the subject.
- to prepare the students so that they can handle the data needed for different organizations
- To develop better understanding of the recent advancements in the field of Database Management System.
- Using simple and well drawn illustrations to develop students skills for data storage and retrieval to support the decision making process.

Course Outcomes (COs): The student will be able to

- understand the different issues involved in the design and implementation of a database system.
- understand and use the concepts of database designs and database models to solve real world problems
- develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency, distributed database and intelligent database, Client/Server etc.
- apply the concepts of transaction processing for safe and secure transactions in different scenarios
- design and demonstrate the different kind of databases and use backup and recovery provisions

UNIT-I

Advanced Transaction Processing: Advanced transaction models: Save points, Nested and Multilevel Transactions, Compensating Transactions, Long Duration Transactions, Transaction Work Flows, Transaction Processing Monitors, Shared disk systems.

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BCCA615	Elective	Advanced DBMS	4	0	0	4	60	20	20	0	0

UNIT-II

Objected Oriented and Object Relational Databases: Modeling Complex Data Semantics, Specialization, Generalization, Aggregation and Association, Objects, Object Identity and its implementation, Clustering, Equality and Object Reference, Architecture of Object Oriented and Object Relational databases, Persistent Programming Languages, Cache Coherence.

UNIT-III

Parallel and Distributed Databases: Parallel architectures, shared nothing/shared disk/shared memory based architectures, Data partitioning, Intra-operator parallelism, pipelining. Distributed Data Storage – Fragmentation and Replication, Location and Fragment Transparency, Distributed Query Processing and Optimization, Distributed Transaction Modeling and concurrency Control, Distributed Deadlock, Commit Protocols, Design of Parallel Databases.

UNIT-IV

Active Database and Real Time Databases: Issues with Real time databases, Triggers in SQL, Event Constraint and Action: ECA Rules, Query Processing and Concurrency Control, Compensation and Databases Recovery, multi-level recovery.

UNIT-V

Image and Multimedia Databases: Modeling and Storage of Image and Multimedia Data, Data Structures – R-tree, k-d tree, Quad trees, Content Based Retrieval: Color Histograms, Textures etc., Image Features, Spatial and Topological Relationships, Multimedia Data Formats, Video Data Model, Audio and Handwritten Data, Geographic Information Systems (GIS).

WEB Database: Accessing Databases through WEB, WEB Servers, XML Databases.

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BCCA615	Elective	Advanced DBMS	4	0	0	4	60	20	20	0	0

Text Books:

1. Carlos Coronel and Steven Morris, "Database Systems: Design, Implementation, & Management", Cengage Learning, 13 edition ,January 1, 2018
2. Rob, Coronel "Data Base Systems: Design Implementation & Management", Cengage Learninig, 11th edition, February 4, 2014.
3. Raghu Ramakrishnan, "Database Management System" McGraw Hill, 3rd Edition, 16 June 2014
4. Korth, Silbertz, Sudarshan, "Fundamental of Database System", McGraw Hill Education; Sixth edition (1 December 2013)

Reference Books:

1. Ramez Elmasri, Shamkant B. Navathe, "**Fundamentals Of Database Systems"** Pearson; 7 edition June 18, 2015.

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BCCA635	Elective	Data Mining and Warehousing	4	0	0	4	60	20	20	0	0

Name of Program: BCA+MCA

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall exceed 10 Marks)

Course Educational Objectives (CEOs):

- To familiarize the students with the need and scope of the subject to build the mental makeup of the students for the field of data mining.
- Using simple and well drawn illustrations develop students skills to discover knowledge to support the decision making process.
- To make the students well versed with the latest trends in data warehousing and data mining.

Course Outcomes (Cos): The student will be able to

- Understand the basic principles, concepts and applications of data warehousing and data mining.
- Introduce the task of data mining as an important phase of knowledge recovery process.
- Ability to do Conceptual, Logical and Physical design of Data Warehouses, OLAP applications and OLAP deployment.
- Have a good knowledge of the fundamental concepts that provide the foundation of data mining.
- Design and implement a data warehouse or data mart to present information needed by management in a form that is usable for management client.
- Design and implement the data preprocessing solutions for different applications.
- Identify and use suitable data mining techniques for Knowledge Discovery.
- Develop dashboard solutions for presentation of knowledge.
- Explore the subject to start as a researcher

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BCCA635	Elective	Data Mining and Warehousing	4	0	0	4	60	20	20	0	0

UNIT – I
Data Mining: Introduction, Motivation, importance, Data type for Data Mining: relation Databases, Data Warehouses, Transactional databases, advanced database system and its applications, Data mining Functionalities: Concept/Class description, Association Analysis, classification & Prediction, Cluster Analysis, Outlier Analysis, Evolution Analysis, Classification of Data Mining Systems.

UNIT – II Data Warehouse and OLAP Technology for Data Mining: Differences between Operational Database Systems and Data Warehouses, a multidimensional Data Model, Data Cube, Data Warehouse Architecture, data warehouse servers.

UNIT- III
Data Preprocessing: Introduction and need of data preprocessing, data preprocessing as a process, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Data Mining Primitives, Concept Description: Characterization and Comparison, Analytical Characterization.

UNIT – IV
Association Rule Mining: Market Basket Analysis, Basic Concepts, Mining Single-Dimensional Boolean Association Rules from Transactional Databases: different algorithms, the Apriori Partition, Dynamic Itemset Counting, Generating Association rules from Frequent items.

UNIT – V
Classification and Prediction and Cluster Analysis: Issues regarding classification and prediction, Major Issues in Data Mining, Applications and Trends in Data Mining: Data Mining Applications, currently available tools.

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							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA635	Elective	Data Mining and Warehousing	4	0	0	4	60	20	20	0	0

Text Books:

1. J. Han and M. Kamber, *Data Mining: Concepts and Techniques*, Morgan Kaufmann Pub., III Edition, 2011
2. Berson, *Data Warehousing, Data Mining and OLAP*, TMH, I Edition, 1997.
3. W.H. Inmon, *Building the Data Warehouse*, Wiley India, III Edition, 2005.
4. Anahory, *Data Warehousing in Real World,* Pearson Education, II Edition, 2012.
5. Adriaans, *Data Mining*, Pearson Education, I Edition, 2002.
6. A.K. Pujari, *Data Mining Techniques*, University Press, Hyderabad, IV Edition,2016.

Shri Vaishnav Vidyapeeth Vishvavidyalaya, Indore
Shri Vaishnav Institute of Computer Applications

Name of Program: BCA with Specialization in Big Data Analytics in Association with IBM

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA606	Compulsory	Lab - I (Software Development-Minor Project - I JAVA Based)	0	0	4	2	0	0	0	30	20

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Education Objectives (CEOs):

This course covers the implementation of advanced program designs with the tools available in the Java programming language. After a detailed review of the fundamentals, advanced topics will include the Graphical User Interface (GUI) for applications, 2D graphics, multimedia, multithreading and client-server models for networking and database connectivity. If time and interest permits, the class may introduce the Java tools for generics and collections.

Course Outcomes (COs):

Students will build on their understanding of Object-Oriented Design (OOD) and Programming (OOP) in Java and learn to write robust, Graphical User Interface (GUI) applications and applets. Students will gain a practical familiarity with 2D graphics, multimedia, programming for concurrency, networking and database connectivity. Students may investigate programming for Web Services, if time and interest permits.

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							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA606	Compulsory	Lab - I (Software Development-Minor Project - I JAVA Based)	0	0	4	2	0	0	0	30	20

Text Books:

1. Patrick Naughton and HerbertzSchildt, "Java-2: The Complete Reference", TMH, 5th edition, 2002.
2. Bill Venners, "Inside Java Virtual Machine", TMH, 2nd edition.
3. Rick Darnell, "HTML 4 unleashed", Techmedia Publication, 2000
4. Shelley Powers, "Dynamic Web Publishing", 2nd edition, Techmedia, 1998.
5. Paul Dietel and Harvey Deitel, "Java How to Program", PHI, 8th edition, 2010.

Reference Books:

1. E. Balagurusamy, "Programming with Java: A Primer", TMH, 1998.
2. Horstmann, "Computing Concepts with Java 2 Essentials", John Wiley.
3. Decker and Hirshfield, "Programming Java: A Introduction to Programming Using JAVA", Vikas Publication, 2000.
4. N.P. Gopalan and J. Akilandeswari, "Web Technology- A Developer's Perspective", PHI, 2nd edition
5. Eric Jendrock, Jennifer Ball, Debbei Carson, "The Java EE5 Tutorial", Pearson, 3rd edition, 2007.
6. Daniel Liang, "Introduction to Java Programming", Pearson, 7th edition, 2010.

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COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA607	Compulsory	Lab-II (Internet Programming Lab)	0	0	4	2	0	0	0	30	20

Legends: L – Lecture; T – Tutorial/Teacher Guided Student Activity; P – Practical; Q/A – Quiz/Assignment/Attendance; MST – Mid Semester Test.
***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class activities, (Given that no component shall exceed more than 10 marks)

Course Educational Objective (CEOs):

The goal of this course is to know & understand concepts of internet programming.

Course Outcomes (Cos): Students will be able to understand:.

- Java programming concepts
- JAVA and HTML tools for Internet programming.
- Scripting languages – Java Script.
- Dynamic HTML programming.
- Server Side Programming tools.

List of Experiments:

1. Java classes and objects
2. Inheritance, Polymorphism
3. Interfaces and Exception Handling, Packages
4. Socket Programming in Java
5. RMI
6. Client side scripting using
    - XHTML,
    - JavaScript/DOM
    - CSS
7. XML DTD, Parsers, XSLT

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							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA607	Compulsory	Lab-II (Internet Programming Lab)	0	0	4	2	0	0	0	30	20

8. Java Applets, AWT, Swings

9. Server Side programming (implement these modules using any of the server side scripting languages like PHP, Servlets, JSP etc.,)
- Gathering form data
- Querying the database
- Response generation
- Session management

10. Application development

Text Books:

1. Cay S. Horstmann and Gary Cornell, "Core Java™, Volume I – Fundamentals" 8th Edition, Prentice Hall, 2007.
2. Cay S. Horstmann and Gary Cornell, "Core Java, Vol. 2: Advanced Features", 8th Edition, Prentice Hall, 2008.
3. Robert W. Sebesta, "Programming the World Wide Web", Addison-Wesley, 6th Edition,2010.
4. Elliotte Rusty Harold, "Java Network Programming", Third Edition, O'Reilly, 2004.
5. Uttam K. Roy, "Web Technologies", Oxford University Press, 1st Edition, 2010.
6. Leon Shklar and Rich Rosen, "Web Application Architecture: Principles.