Shri Vaishnav Vidyapeeth Vishwavidyalaya

B.Tech.(CSE-Big Data Analytics -IBM)
Choice Based Credit System (CBCS) 2018-19
SEMESTER VII

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*
BTCS601	**UG**	**Compiler Design**	3	1	2	5	60	20	20	30	20

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

Course Objectives:
1. To introduce the major concept areas of language translation and compiler design
2. To enrich the knowledge in various phases of compiler and its use
3. To provide practical programming skills necessary for constructing a compiler

Course Outcomes:
1. Ability to apply the knowledge of lex tool &yacc tool to develop a scanner & parser
2. Ability to design and develop software system for backend of the compiler
3. Ability to comprehend and adapt to new tools and technologies in compiler design

Syllabus:

UNIT I
Introduction to Compiling: Compilers–Analysis of the source program**,** Phases of a compiler**,** Cousins of the Compiler, Grouping of Phases and Compiler construction tools, Lexical Analysis, Role of Lexical Analyzer, Input Buffering, Specification of Tokens.

UNIT II
 Syntax Analysis: Role of the parser, Writing Grammars, Context-Free Grammars, Top Downparsing, Recursive Descent Parsing, Predictive Parsing, Bottom-up parsing, Shift Reduce Parsing, Operator Precedent Parsing, LR Parsers, SLR Parser – Canonical LR Parser – LALR Parser.

UNIT III
Intermediate Code Generation: Intermediate languages**,** Declarations, Assignment Statements, Boolean Expressions, Case Statements, Back patching, Procedure calls.

UNIT IV
Code Optimization and Run Time Environments: Introduction, Principal Sources of Optimization, Optimization of basic Blocks, DAG representation of Basic Blocks - Introduction to Global Data Flow Analysis, Runtime Environments, Source Language issues, Storage Organization, Storage Allocation strategies, Access to non-local names, Parameter Passing, Error detection and recovery.

UNIT V
Code Generation: Issues in the design of code generator,The target machine, Runtime Storagemanagement,Basic Blocks and Flow Graphs, Next-use Information, A simple Code generator, Peephole Optimization.

Text Books:
1. Alfred V. Aho, Jeffrey D Ullman, "Compilers: Principles, Techniques and Tools", Pearson
2. Education Asia, 2012
3. Jean Paul Tremblay, Paul G Serenson, "The Theory and Practice of Compiler Writing", BS Publications, 2005
4. Dhamdhere, D. M., "Compiler Construction Principles and Practice", 2nd edition, Macmillan India Ltd., New Delhi, 2008

Reference Books:
1. Allen I. Holub, "Compiler Design in C", Prentice Hall of India, 2003
2. C. N. Fischer and R. J. LeBlanc, "Crafting a compiler with C", Benjamin Cummings, 2003
3. HenkAlblas and Albert Nymeyer, "Practice and Principles of Compiler Building with C", PHI, 2001
4. Kenneth C. Louden, "Compiler Construction: Principles and Practice", Thompson Learning, 2003

List of Experiments:
1. To study the Lex Tool.
2. To study the Yacc Tool.
3. Write a program to implement Lexical Analyzer to recognize few patterns of C.
4. Write a program to implement the Recursive Descent Parser.
5. Write a program to implement the Computation of FIRST and FOLLOW of variables of grammar.
6. Write a program to compute the leading and trailing symbols of grammar.
7. Write a program to implement Operator Precedence Parser.
8. Write a program to implement SLR parser.
9. Write a program to check the data types.
10. Write a program to implement the generation of three address code.
11. Write a program to implement the computation of postfix notation.
12. Write a program to implement the computation of Quadruple

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Shri Vaishnav Vidyapeeth Vishwavidyalaya

B.Tech.(CSE-Big Data Analytics -IBM)
Choice Based Credit System (CBCS) 2018-19
SEMESTER VII

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*
BBAI501	UG	Human Values and Professional Ethics	4	0	0	4	60	20	20	0	0

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

Course Objectives:
The objective of the course is to disseminate the theory and practice of moral code of conduct and familiarize the students with the concepts of "right" and "good" in individual, social and professional context.

Course Outcomes:
1. Help the learners to determine what action or life is best to do or live.
2. Right conduct and good life.
3. To equip students with understanding of the ethical philosophies, principles, models that directly and indirectly affect business.

Syllabus:

Unit I: Human Value
1. Definition, Essence, Features and Sources

2. Sources and Classification

3. Hierarchy of Values

4. Values Across Culture

Unit II: Morality
1. Definition, Moral Behaviour and Systems

2. Characteristics of Moral Standards

3. Values Vs Ethics Vs Morality

4. Impression Formation and Management
Unit III: Leadership in Indian Ethical Perspective.
1. Leadership, Characteristics
2. Leadership in Business (Styles), Types of Leadership (Scriptural, Political, Business and Charismatic)
3. Leadership Behaviour, Leadership Transformation in terms of Shastras (Upanihads, Smritis and Manu-smriti).

Unit IV: Human Behavior – Indian Thoughts
1. Business Ethics its meaning and definition
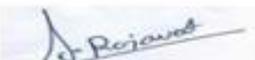
2. Types, Objectives, Sources, Relevance in Business organisations.

3. Theories of Ethics, Codes of Ethics

Unit V: Globalization and Ethics

1. Sources of Indian Ethos & its impact on human behavior

2. Corporate Citizenship and Social Responsibility – Concept (in Business),

3. Work Ethics and factors affecting work Ethics.

Suggested Readings

1. Beteille, Andre (1991). *Society and Politics in India*. AthlonePress:New Jersey.

2. Chakraborty, S. K. (1999). *Values and Ethics for Organizations*. oxford university press

3. Fernando, A.C. (2009). *Business Ethics - An Indian Perspective .*India: Pearson Education: India

4. Fleddermann, Charles D. (2012). *Engineering Ethics*. New Jersey: Pearson Education / Prentice Hall.

5. Boatright, John R (2012). *Ethics and the Conduct of Business.*Pearson. Education: New Delhi.

6. Crane, Andrew and Matten, Dirk (2015). *Business Ethics*. Oxford University Press Inc:New York.

7. Murthy, C.S.V. (2016). Business *Ethics – Text and Cases*. Himalaya Publishing House Pvt. Ltd:Mumbai

8. Naagrajan, R.R (2016). *Professional Ethics and Human Values*. New Age International Publications:New Delhi.

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Join: Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTIBMB701	UG	Planning Analytics	2	0	0	2	60	20	20	0	0

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

COURSE OBJECTIVES

The objective of the course would be to understand Financial Performance Management, Overview of Cognos TM1, and Import Data to Create Objects, Create and Customize Dimensions & Cubes.

COURSE OUTCOMES
Upon completion of the subject, students will be able to:

1. Learners will be able to create new server, dimensions, cubes and import data using TM1. Learners will be able to understand how to share data across cube and create complete model and use additional modeling techniques in TM1

2. Learners will be able to understand how to model data using architect

3. To learn about Customize Business Rules, SKIPCHECK, FEEDERS, Creation of applications in TM1

4. To learn about using MDX queries in TM1, integrate with Cognos BI and contribute to Planning Applications

5. To understand Financial Performance Management, Overview of Cogon's TM1, Import Data to Create Objects, Create and Customize Dimensions and Cubes

SYLLABUS

UNIT–I
Understanding of Enterprise Performance Management Finance function in an organization Financial performance management Importance of financial performance management for CFO; Architecture and components of Planning Analytics / TM1 TM1 server fundamentals Fundamental modeling concepts TM1 MOLAP Solution In-Memory Data Storage.
Identify characteristics of Operational and Reporting Databases Online Analytical Processing Core Model Design Principles create a TM1 model and deploy it; Guided Import Import data to create a dimension Import Data to Create and populate cube; Cubes dimensions and elements Create dimensions manually Import dimensions Edit dimensions Create dimension calculations;

UNIT–II
Construct a new cube Cube properties Edit a cube structure Review and use a pick list Create cube
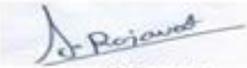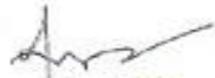
calculations; Import Data:Identify data sources Create processes to load data Create a process to delete data in a cube Create processes to update and maintain the model; Share Data Across Cubes with Links: Types of links Create and modify links Review rule- and process-based links.

UNIT–III
Rule automatically generated rules Rule Blocks Disable & Enable auto-generated rules Manual Rules; Optimize Rule Performance: Consolidations and Sparsely SKIPCHECK FEEDERS Complete Model: Discuss the model development process complete objects for the model Review tools to aid in model development

UNIT–IV
Application types Create a new application Apply security in the application Activate and de-activate an application; Additional Modeling Techniques: Create dynamic subsets Use dimension functions Implement business logic Improve cube performance Use TM1 utilities
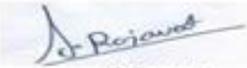
UNIT–V
Discuss currency challenges Review control cubes Create rules for currency conversion Use TM1 techniques to reduce maintenance; Model Data with Cognos TM1 Architect: Review Cognos TM1 Architect Record MDX queries Customize drill-through paths Use trace calculations; Model for Different Fiscal Requirements:Discuss time considerations Use discrete time dimensions Implement a continuous time dimension model Contribute to Planning Applications: Identify the user roles and workflow states Enter da
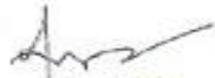
TEXT BOOKS:
1.   Cognos TM1: Develop and Design Models, IBM Cognos , IBM, 2010 Edition 1.

REFERENCES:
1. Fintech: The Beginner's Guide to Financial Technology, Jacob William, Create Space Independent Publishing Platform, 2016 Edition 1.
2. Think Python, Allen B. Downey, O'Reilly Media, 2016 Edition 2.

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Shri Vaishnav Vidyapeeth Vishwavidyalaya

B.Tech.(CSE-Big Data Analytics -IBM)
Choice Based Credit System (CBCS) 2018-19
SEMESTER VII

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*
BTIBM701	UG	MongoDB and NoSQL	3	0	2	4	60	20	20	30	20

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

Course Objectives:

This course will help the students in understanding:

1. The basics of NoSQL.
2. How it is different from RDBMS.
3. Overview on MongoDB.
4. Basic MongoDB operation and advanced concept in MongoDB.

Course Outcomes:

After the successful completion of this course students will be able to:

1. Describe the key components of NoSQL & MongoDB and its role in Computer Science;
2. Identify and describe advantages of NoSQL and understand the difference between NoSQL and RDBMS.
3. How to done Installation of MongoDB and understand basics of MongoDB.
4. Understand the Advanced MongoDB Concepts and how these concepts help and solve the Big Data problems
5. Analyze and understand the computational trade-offs involved in applying different MongoDB query operations.

Syllabus:

UNIT I
Overview of NOSQL: Review of RDBMS, ACID properties, Introduction to NoSQL, CAP Theorem, different data models, Pros & Cons of using NoSQL, Comparison between SQL and NoSQL, Document Databases & it's Advantages.

UNIT II
Introduction to MongoDB: Installation of MongoDB, Document and Collections, Data Model Design (Embedded Data Models and Normalized Data Model), MongoDB Use Cases.

UNIT III
Basic MongoDB Operations: Data Types in Mongo Shell, Operators in MongoDB: Comparison Query operators, Logical Query operators, Element Query operators, Evaluation Query operators, Query operator Array, Projection operator, Inserting and Saving Documents, Batch Insert, Removing & Updating Documents: Updating using update() method, Updating using save() method, Replace a document, Query Document, AND condition in MongoDB, OR condition in MongoDB, OR & AND condition in MongoDB.

Unit IV
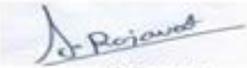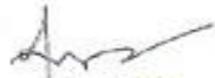
Query on Embedded/Nested Documents: Querying Nested field using equality match, Querying Nested field using dot (".") operator, Specify match using Query Operator, Specify AND condition, Query an Array: Querying array using equality match, Query an Array for an element, Query an array by filter condition, Query elements that Meets Multiple Criteria, Query for an element by Array by Index Position, Query an array by array length, Query an Array of Embedded Documents: Query a document nested in an array, Query Array Index to Query for a Field in the Embedded Document, Query embedded field in array using a query condition, Nested Documents Meets Multiple Query Conditions on Nested Fields, Project Fields to Return from Query, Return All the fields in documents, Return specific fields in documents, Suppress _id Field, Return all but excluded fields, Return Specific Fields in Embedded Documents, Suppress Specific fields in embedded document, Projection on Embedded documents on Array, Project Specific Array elements in the Returned Array, Query null or Missing fields, Equality Filter, Type Check, Existence Check.

Unit V:
Advanced MongoDB Operations: Map-Reduce, Data Aggregation, Indexing, Type of Indexes, Replication via Replica Sets, Setting replica set in MongoDB using Docker, Sharding, Shard key, Scalability, Vertical Scaling, Horizontal Scaling, MongoDB-Java/Python Exercise.

TEXT BOOKS:

1. Getting Started with Nosql Book by Gaurav Vaish
2. IBM Text Book.

REFERENCES:
1. SQL & NoSQL Databases: Models, Languages, Consistency Options and Architectures for Big Data Management Book by Andreas Meier and Michael Kaufmann, July 2019.
2. MongoDB 4 Quick Start Guide: Learn the Skills You Need to Work with the World's Most Popular NoSQL Database Book by Doug Bierer, September 2018
3. NoSQL Data Models: Trends and Challenges, by Olivier Pivert, July 2018.
4. Sams Teach Yourself NoSQL with MongoDB in 24 Hours Book by Brad Dayley, August 2014.

LIST OF EXPERIMENTS:
1. Explain Mongo DB Comparison Query operators.
2. Write OR & AND condition in Mongo DB.
3. Write a program to Insert and Saving Documents in Mongo DB.
4. Write Query on Nested field using equality match, using dot (".") operator.
5. Write Query for an array element by filter condition and Query for elements that Meets Multiple Criteria.
6. Write Query for an array element by Index Position
7. Write query which return all the fields in documents, which return specific fields in documents.
8. Setting replica set in Mongo DB using Docker.
9. Install Eclipse IDE which is required for Maven installation

Shri Vaishnav Vidyapeeth Vishwavidyalaya

B.Tech.(CSE-Big Data Analytics -IBM)
Choice Based Credit System (CBCS) 2018-19
SEMESTER VII

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*
BTIBMC601	**UG**	**Artificial Intelligence and Applications**	3	0	2	4	60	20	20	30	20

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

Course Objectives:

The student will have ability to:
1. Understand the evolution and relevance of AI in the world today.
2. Explore opportunities brought by the intersection between human expertise and machine learning.
3. Understand AI technology building blocks, including: natural language processing, machine and deep learning, neural networks, virtual agents, autonomics and computer vision.
4. Develop a deeper understanding of machine learning techniques and the algorithms that power those systems.
5. Engage in role-playing challenge-based scenarios to propose real-world solutions to different industries using AI and design thinking.

Course Outcomes:

1. Describe the field of AI and its subfields machine learning, NLP and computer vision
2. Describe how Watson technology is being applied to solve real world problems
3. List the Watson services available on the IBM Cloud
4. Describe the purpose of training the various Watson services to adapt them to a closed-domain
5. Describe how to build a chatbot by using the IBM Watson Conversation service

Syllabus:

UNIT–I: AI LANDSCAPE
AI impact in the world today, History and Evolution of AI, AI Explained, AI Technologies, Applications of A.I. Summary & Resources

UNIT–II: AI INDUSTRY ADOPTION APPROACHES
AI Industry Impact, Autonomous Vehicles, SmartRobotics, Future Workforce and AI, Applications of AI. Main focus of AI, Summary & Resources.

UNIT–III: FUTURE TRENDS FOR AI
Artificial Intelligence Trends, Limits of machine and human, AI predictions in the next 5 years Summary and Resources.
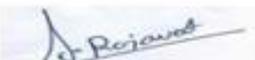
Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Join: Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

UNIT–IV: MACHINE LEARNING AND DEEP LEARNING

Machine Learning Explained, Various Algorithms of Machine Learning, Deep Learning Explained, Deep learning ecosystem, Experiments, Explain what neural networks are and why they are important in today's AI's field Explain what domain adaptation is and its applications Summary& Resources.

UNIT–V: NATURAL LANGUAGE UNDERSTANDING AND COMPUTER VISION

NLP Overview, NLP Explained, Virtual Agents Overview, Virtual Agents for the Enterprise, Summary and Resources, Computer Vision Overview, AI Vision through Deep Learning, Computer Vision for the Enterprise, Experiments. Summary and Resources

COMPUTER VISION

Define computer vision, History of computer vision Tools and Service of completed vision, Use cases of computer vision. Describe cognitive system, Summary and Resources.

TEXT BOOKS:
1. IBM TEXT BOOK

REFERENCES:
1. A Modern Approach" by Norvig and Russell

LIST OF EXPERIMENTS:

1. SETTING UP YOUR CLOUD ACCOUNT
- Obtain an IBM cloud account
- Apply promotion code
- Uses the various services of IBM Cloud

2. CREATING A MODEL USING MACHINE LEARNING
- Apply Algorithmes
- Train the model
- Test The Model

3. CREATING AN AI VIRTUAL ASSISTANT
- Create a dialog skill
- Create a virtual assistant
- Load virtual assistant with various dialog skills
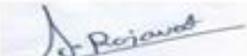- Integrate your assistant

4. CREATE A CHATBOT USING PYTHON
- Use python Library
- Train the ChatBot
- Test The ChatBot

5. CREATE AN APPLICATIN USING OPEN CV
- Understand the Open CV Library
- Train The images and test

6.EDGE DETECTION CONCEPT

- Canny Algorithme
- How to detect the edges

7.BASIC UNDERSTANDING OF Tkinter,CREATE A GUI USING PYTHON
- Create an interface for the project
- Use the buttons and drop down

8. BASIC UNDERSTANDING OF NLTK
- Concept of Tokenization
- Concept of Lematization

Shri Vaishnav Vidyapeeth Vishwavidyalaya

B.Tech.(CSE-Big Data Analytics -IBM)
Choice Based Credit System (CBCS) 2018-19
SEMESTER VII

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY END SEM University Exam	THEORY Two Term Exam	THEORY Teachers Assessment*	PRACTICAL END SEM University Exam	PRACTICAL Teachers Assessment*
BTCS706	UG	Project	0	0	8	4	0	0	0	120	80

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

Guideline and instruction for Project

S.No	Particular
1.	Group formation and Submission of Project Topic (At least three(03))
2.	Guide allotment and Topic Finalization
3.	Presentation –I Contents: 1. Problem Domain 2. Literature Survey 3. Feasibility Study 4. References
4.	Synopsis Submission
5.	Presentation – II Contents: 1. SRS / URD 2. Conceptual Design
6.	Presentation – III Contents: 1. Detail Design 2. Implementation & Test Plan
7.	Project Report Submission

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore