



# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

## Shri Vaishnav Institute of Information Technology

### B.Tech. (CSE- Artificial Intelligence -IBM)

### Choice Based Credit System (CBCS) 2019-20

### **SEMESTER VII**

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CRED ITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
<b>BTCS601</b>	<b>DCC</b>	<b>Compiler Design</b>	60	20	20	30	20	3	1	2	5

**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 Educational Objectives (CEOs):

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 (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

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

**10HRS**

**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.

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#### **UnitII**

**9HRS**

**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**

**8HRS**

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

#### **Unit-IV**

**7HRS**

**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**

**8HRS**

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

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#### **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. Dhamdhare, D. M., "Compiler Construction Principles and Practice", 2nd edition, Macmillan India Ltd., New Delhi, 2008

#### **References:**

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. Henk Alblas and Albert Nymeyer, "Practice and Principles of Compiler Building with C", PHI, 2001
4. Kenneth C. Loudon, "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.

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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

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<b>BBAI501</b>	<b>AECC</b>	<b>Human Values and Professional Ethics</b>	60	20	20	0	0	4	0	0	4

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### Course Educational Objectives (CEOs):

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 (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

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

**10HRS**

1. Definition, Essence, Features and Sources
2. Sources and Classification
3. Hierarchy of Values
4. Values Across Culture

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#### **Unit II**

**9HRS**

1. Definition, Moral Behavior and Systems
2. Characteristics of Moral Standards
3. Values Vs Ethics Vs Morality
4. Impression Formation and Management

#### **Unit-III**

**8HRS**

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**

**7HRS**

1. Business Ethics its meaning and definition
2. Types, Objectives, Sources, Relevance in Business organisations.
3. Theories of Ethics, Codes of Ethics

#### **Unit-V**

**8HRS**

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.

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#### **Suggested Readings**

1. Beteille, Andre (1991). *Society and Politics in India*. Athlone Press: 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.

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<b>BTIBMA702</b>	<b>DCC</b>	<b>Deep Learning</b>	60	20	20	0	0	2	0	0	2

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#### Course Educational Objectives (CEOs):

1. To provide an overview of an exciting field of Deep Learning
2. Develop an understanding of the complete process of deep learning project and its near term future direction
3. To introduce the tools required to manage and analyse deep learning project like: Jupyter Notebook and tensor flow.
4. To teach the fundamental techniques and principles in achieving deep learning with scalability and streaming capability.
5. To enable students to have skills that will help them to solve complex real-world problems in for business decisions with neural networks.

#### Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

1. Understand the concept of Deep Learning from a global context.
2. To understand and apply Neural Networks in Market perspective of Deep Learning Projects. Applying and analyzing architecture of Convolution Neural Networks to achieving data learning models.
3. Be able to design and implement recurrent neural network and LSTM systems.
4. Be able to design and implement RBM sand understand auto encoders concept in deep learning. Be able to design and implement various Neural Networks model in a range of real-world applications. Creating projects and research activities based on Neural Networks Deep Learning using Python.

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<b>BTIBMA702</b>	<b>DCC</b>	<b>Deep Learning</b>	60	20	20	0	0	2	0	0	2

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## Syllabus

### Unit I

**10HRS**

#### Introduction to Deep Learning

Why Deep Learning? Introduction to Neural Networks. Neural Network Architecture. Full-cycle of a Deep Learning Project. Activation Functions. Forward and Backward Propagation. Loss function and optimization functions.

### Unit II

**9HRS**

#### Convolutional Networks

Introduction to convolutional networks. CNN Architecture. Understanding Convolutions. CNN for Classification.

### Unit-III

**8HRS**

#### Recurrent Neural Network

Introduction to RNN model. What is Sequential Problem? The LSTM model

### Unit-IV

**7HRS**

#### Restricted Boltzmann Machines and Auto encoders

Introduction to RBMs. Training RBMs. Introduction to auto encoders. Structures of auto encoders.

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### **SEMESTER VII**

#### Unit-V

8HRS

#### PROJECT

Research Activities on Deep Learning with projects and research letters.

#### Text Books:

1. Deep Learning with Python by François Chollet
2. Hands-On Machine Learning with Scikit-Learn, Keras and Tensor Flow: Concepts, Tools and Techniques to Build Intelligent Systems by Aurelien Geron
3. Deep Learning (Adaptive Computation and Machine Learning series) by Ian Goodfellow

#### References:

1. Machine learning with Tensor Flow For Dummies by Matthew Scarpino
2. Machine Learning for Big Data: Hands-On for Developers and Technical Professionals” by Jason Bell.

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<b>BTIBMA701</b>	<b>DCC</b>	<b>Text Analysis</b>	60	20	20	30	20	3	0	2	4

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#### Course Educational Objectives (CEOs):

1. To provide an overview of Introduction to Text Analytics.
2. To introduce the students with the base of all the text analysis concepts.
3. To teach the fundamental techniques and principles in text analytics so that their data analysis skills can be achieved.
4. To enable students to have skills that will help them to analysis structured and unstructured real-world data and introduce them to a new world of emerging technologies.

#### Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

1. Introduction to text mining
2. An overview of text mining
3. Reading text data
4. Linguistic analysis and text mining
5. Creating a text mining concept model
6. Reviewing types and concepts in the Interactive Workbench
7. Editing linguistic resources
8. Fine-tuning resources
9. Performing Text Link Analysis
10. Clustering concepts
11. Categorization techniques

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12. Creating categories
13. Managing linguistic resources
14. Using text mining models
15. The process of text mining

## Syllabus

### UnitI

**10HRS**

#### Introduction to text mining

Text mining and data mining, Text mining applications, Text Mining nodes, Identify the Text Mining modeling node, Steps in a typical text mining session, Demonstration 1: A typical text-mining session and Functions Recursion

### UnitII

**9HRS**

#### Reading text data

File List node, Use the File List node in text mining, Demonstration 1: Using the File List node to read text from multiple files, File Viewer node, Demonstration 2: Using the File Viewer node to view documents, Web Feed node, Web Feed node - RSS format, Web Feed node - HTML format, Demonstration 3: Reading text from a Web Feed.

### Unit-III

**8HRS**

#### Linguistic analysis and text mining

Identify elements in linguistic analysis, Identify Parts of Speech (PoS), Extractor component workflow, Text preprocessing, Identification of candidate terms, Identification of equivalence

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classes, Forcing and excluding, Assign types, Categorize extracted concepts, Use Libraries and Resource templates, Use Text Analysis Packages (TAPs), Linguistic resource relationships.

#### Unit-IV

**7HRS**

#### **Categorization techniques**

Strategies for creating categories, Text Analysis Package (TAP), Demonstration 1: Using a Text Analysis Package to categorize data, Import predefined categories, Demonstration 2: Importing predefined categories, from a Microsoft Excel file, automated classification automated classification methods, Linguistic categorization techniques, Additional categorization options, Demonstration 3: Automated classification

#### Unit-V

**8HRS**

#### **Using text mining models**

Demonstration 1: Explore a text mining model, Demonstration 2: Develop a model by combining categories and customer data, Demonstration 3: Score new data.

#### **Text Books:**

1. IBM Skills Academy Content

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<b>BTIBMA701</b>	<b>DCC</b>	<b>Text Analysis</b>	60	20	20	30	20	3	0	2	4

**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.

#### **List of Experiments:**

1. Making preparations for a text mining project.
2. Text mining customer opinions about portable music players.
3. Text mining data from an RSS feed.
4. Review extracted results in the Interactive Workbench.
5. Editing dictionaries.
6. Editing advanced resources.
7. Perform Text Link Analysis.
8. Categorize music player data.
9. Use text mining models.

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## Shri Vaishnav Institute of Information Technology

### B.Tech. (CSE- Artificial Intelligence -IBM)

### Choice Based Credit System (CBCS) 2019-20

### **SEMESTER VII**

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CRED ITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
<b>BTIBM703</b>	<b>DCC</b>	<b>Cloud Security</b>	60	20	20	30	20	3	0	2	4

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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- **Syllabus is Progress/Process**

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### **SEMESTER VII**

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CRED ITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
<b>BTCS706</b>	<b>PW</b>	<b>Project</b>	0	0	0	120	80	0	0	8	4

**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.

### 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

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