GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc), 6th Semester
Branch: Sowtware Development
Subject Name: Introduction to Artificial Intelligence
Subject Code: 1160201

With effective from academic year 2018-19

Type of course: Core
Prerequisite: Data Structures
Rationale: With the usage of Internet and World Wide Web increasing day by day, the field of AI and its techniques are being used in many areas which directly affect human life. Various techniques for encoding knowledge in computer systems such as Predicate Logic, Production rules, Semantic networks find application in real world problems. The fields of AI such as Game Playing, Natural Language Processing, and Connectionist Models are also important. Student should know some programming language for AI.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA(M)	ESE (V)	PA(I)	
3	0	0	3	50	0	0	0	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Contents:

Sr. No.	Practical / Hands on Exercise	Teaching Hrs.	Module % Weightage
1	**UNIT–I** **Overview of Artificial Intelligence:** Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success. **Problems, problem space and search:** Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem **Heuristic search techniques :** Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction	12	30
2	**UNIT–II** **Knowledge Representation:** Definition and importance of knowledge, Knowledge representation, Various approaches used in knowledge representation, Issues in knowledge representation. **Using Predicate Logic:** Represent ting Simple Facts in logic, Representing instances and is-a relationship, Computable function and predicate.	10	20
3	**UNIT–III** **Natural language processing:** Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing. **Learning:** Introduction learning, Rote learning, Learning by taking advice, Learning in problem solving, Learning from example-induction, Explanation based learning. testing.	10	30
4	**UNIT–IV** **Expert System:** Introduction, Representing using domain specific knowledge, Expert system shells.	10	20

	Knowledge acquisition: General concepts in knowledge acquisition, early work in Machine Learning, examples of Inductive Learners, computer vision, Robotics, overview of LISP- AI language, Overview of PROLOG – AI Language		
	Total	**42**	

Reference Books:

1. Artificial Intelligence, Elaine Rich And Kevin Knight, Tata Mcgraw-Hill
2. Artificial Intelligence, Ela Kumar, I. K. International
3. Artificial Intelligence, Munish Chandra Trivedi, Khanna Publishing House
4. PROLOG Programming for Artificial Intelligence, Ivan Bratko, Pearson

Suggested Specification table with Marks (Theory): (For BVOC only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	20	20	0	0	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Course Outcomes:

Sr. No.	**CO Statement**	**Marks % Weightage**
CO-1	Understand various search methods with heuristic.	30
CO-2	Understand various knowledge representation methods.	20
CO-3	Understanding of Natural Language Processing.	30
CO-4	Understanding of Expert System.	20

Laboratory work: NA

List of Open Source Software/learning website :

1.http://www.journals.elsevier.com/artificialintelligence/
2.https://www.technologyreview.com/s/534871/our-fear-of-artificial intelligence/
3.http://www.sanfoundry.com/artificial-intelligence-mcqs-inductive-logic-u