

Branch Name:	Computer Engineering / Information Technology
Program Code:	ET103/ET105
Course Title:	Artificial Intelligence Practical
Course Code:	2ET1030503P
Pre-requisite Course:	Knowledge of Programming, Algorithms, Data Structures.

Course Objectives:

- The field of AI and its techniques are being used in many areas which directly affect human life. Get insights into the basic knowledge of Artificial Intelligence, AI application along with its importance.
- 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, Genetic Algorithm, Neural Network and Connectionist Models are also important.
- Students should know some programming language for AI.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

Course Contents:

Sr.No	Practical Exercise	Total Hour
1	Implement a python program to perform linear regressions for a dataset that prevails in csv format	2
2.	Implement a python program to perform logistic regression	2
3.	Write a program to construct a Support Vector Machine considering medical data. Use this model to demonstrate the diagnosis of heart patients using the standard Heart Disease Data Set. You can use Python ML library classes/API.	3
4.	Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.	3
5.	Implement a python program to perform Hill climbing algorithm	2
6.	Assuming a set of data that need to be classified, use a decision tree model to perform this task. Preferably use any dataset like medical, titanic dataset or others to evaluate the accuracy	2
7.	Write a python program to demonstrate working of Genetic Algorithm	3
8.	Write a python program to demonstrate working of Hopfield Neural Network	3

Reference Books:

- Kevin Night and Elaine Rich, Nair B., 2008, “Artificial Intelligence (SIE)”, McGraw Hill.
- Dan W. Patterson, “Introduction to Artificial intelligence and expert system”, PHI, 3rd Edition, 2012 .
- S. Russel and P. Norvig, “Artificial Intelligence – A Modern Approach”, Second Edition, Pearson Education
- David Poole, Alan Mackworth, Randy Goebel, ”Computational Intelligence : a logical approach”, Oxford University Press.

- G. Luger, “Artificial Intelligence: Structures and Strategies for complex problem solving”, Fourth Edition, Pearson Education.
- J. Nilsson, “Artificial Intelligence: A new Synthesis”, Elsevier Publishers
- S, Rajasekaran & G.A. Vijayalakshmi Pai, Neural Networks, Fuzzy Logic & Genetic Algorithms, Synthesis & applications, PHI Publication

List of Open-Source Software/learning website:

- <https://nptel.ac.in/courses/106105077>
- <https://nptel.ac.in/courses/106106126>
- <https://aima.cs.berkeley.edu>
- https://ai.berkeley.edu/project_overview.html
- <http://www.cs.cmu.edu/~tom/>
- <http://www.holehouse.org/mlclass/>

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	Understand the theory of Artificial intelligence and Machine Learning.	Understand
COL2	Understand the Knowledge representation issues and concept learning	Understand
COL3	Apply decision tree learning and artificial neural networks.	Apply
COL4	Apply Bayesian learning using bayes theorem, naive bayes classifier and EM Algorithm	Apply
COL5	Understand the concepts of Game Theory	Understand
COL6	Understand the fundamental of Genetic Algorithms	Understand

Mapping of CLO with PO and PSO:

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
CLO1	M	M	L									L	M	M
CLO2	M	M	L									L	M	M
CLO3	M	M	L									L	M	M
CLO4	M	M	L									L	M	M
CLO5	M	M	L									L	M	M
CLO6	M	M	L									L	M	M

H: High, M: Medium, L: Low