LECTURE PLAN

Institute/Department	UNIVERSITY INSTITUTE OF ENGINEERING (UIE)	**Program**	**Bachelor of Engineering - Computer Science & Engineering (CS201)**
Master Subject Coordinator Name:	Rohit Kumar Singhal	**Master Subject Coordinator E-Code**:	**E13497**
Course Name	Machine Learning Lab	**Course Code**	**20CSP-317**

Lecture	Tutorial	Practical	Self Study	Credit	Subject Type
0	0	2	0	1.0	P

Course Type	Course Category	Mode of Assessment	Mode of Delivery
Program Core	Graded (GR)	Practical Examination (PRAC)	Practical (PRAC)

Mission of the Department	MD1: To provide practical knowledge using state-of-the-art technological support for the experiential learning of our students. MD2: To provide an industry-recommended curriculum and transparent assessment for quality learning experiences. MD3: To create global linkages for interdisciplinary collaborative learning and research. MD4: To nurture an advanced learning platform for research and innovation for students' profound future growth. MD5: To inculcate leadership qualities and strong ethical values through value-based education.
Vision of the Department	"To be recognized as a leading Computer Science and Engineering department through effective teaching practices and excellence in research and innovation for creating competent professionals with ethics, values, and entrepreneurial attitude to deliver service to society and to meet the current industry standards at the global level."

Program Educational Objectives(PEOs)	
PEO1	PEO1 Graduates of the Computer Science and Engineering will contribute to the Nation's growth through their ability to solve diverse and complex computer science and engineering problems across a broad range of application areas. (PEO1 is focused on Problem Solving)
PEO2	PEO2 Graduates of the Computer Science and Engineering will be successful professionals, designing and implementing Products & Services of global standards in the field of Computer Science & Engineering, becoming entrepreneurs, Pursuing higher studies & research. (PEO 2 is focused on Professional Success)
PEO3	PEO3 Graduates of the Computer Science and Engineering Program will be able to adapt to changing scenario of dynamic technology with an ability to solve larger societal problems using logical and flexible approach in decision making. (PEO 3 is focused on Attaining Flexibility and Adaptability)

Program Specific OutComes(PSOs)	
PSO1	PSO1 Exhibit attitude for continuous learning and deliver efficient solutions for emerging challenges in the computation domain.
PSO2	PSO2 Apply standard software engineering principles to develop viable solutions for Information Technology Enabled Services (ITES).

Program OutComes(POs)	
PO1	PO1 Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
PO2	PO2 Problem analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
PO3	PO3 Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal, and environmental considerations.
PO4	PO4 Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
PO5	PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7	PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO8	PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	PO9 Individual or teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO11	PO11 Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	PO12 Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context to technological change.

Text Books

Sr No	Title of the Book	Author Name	Volume/Edition	Publish Hours	Years
1	Machine Learning, hand on for developers and Technical Professionals	Json Bell	3	Indianpolis	2015
2	achine Learning Mastery With Python	Jason Brownlee	4	Jason Brownlee	2016

Reference Books

Sr No	Title of the Book	Author Name	Volume/Edition	Publish Hours	Years
1	INTRODUCTION TO MACHINE LEARNING	Nils J. Nilsson, Robotics Laboratory	3	Standford	2005

Course OutCome

SrNo	OutCome
CO1	Classify fundamental of data analysis, machine learning algorithms as supervised learning or unsupervised learning.
CO2	Select and apply the appropriate machine learning algorithm to solve problems of moderate complexity
CO3	Design and evaluate the unsupervised models through python or R in built functions.
CO4	Evaluate the machine learning models pre-processed through various feature engineering algorithms by python / R programming.
CO5	Optimize the models learned and report on the expected accuracy that can be attained by applying the algorithms to a real-world problem.

Lecture Plan Preview-Practical

Unit No	ExperimentNo	Experiment Name	Text/ Reference Books	Pedagogical Tool**	Mapped with CO Numer(s)
1	1	Implement Exploratory Data Analysis on any data se	,T-achine Learning Mastery With P,T-Machine Learning, hand on for ,R-INTRODUCTION TO MACHINE LEAR	Hand On Activity based,Infographics Practical,Instructor Lead Workshop Practical,Simulation Practical,Video Demonstration	CO1
1	2	Implement Data Visualization.	,T-achine Learning Mastery With P,T-Machine Learning, hand on for ,R-INTRODUCTION TO MACHINE LEAR	Hand On Activity based,Instructor Lead Workshop Practical,Simulation Practical	CO1

1	3	Implement Linear Regression on any data set.	T-achine Learning Mastery With P,T-Machine Learning, hand on for	Infographics Practical,Simulation Practical	CO1,CO2,CO3
2	4	Implement Support Vector Machine on any data set a	,T-achine Learning Mastery With P,R-INTRODUCTION TO MACHINE LEAR	Infographics Practical,Instructor Lead Workshop Practical,Simulation Practical	CO2,CO3
2	5	Implement Naïve Bayes on any dataset.	,T-Machine Learning, hand on for ,R-INTRODUCTION TO MACHINE LEAR	Hand On Activity based,Infographics Practical,Instructor Lead Workshop Practical,Simulation Practical	CO2,CO3,CO4,CO5
2	6	Implement K-Nearest Neighbor on any data set	,T-achine Learning Mastery With P,T-Machine Learning, hand on for ,R-INTRODUCTION TO MACHINE LEAR	Hand On Activity based,Infographics Practical,Instructor Lead Workshop Practical,Simulation Practical,Video Demonstration	CO1,CO2,CO3,CO4,CO5
2	7	Implement a Decision Tree and compare the performa	,T-achine Learning Mastery With P,T-Machine Learning, hand on for ,R-INTRODUCTION TO MACHINE LEAR	Hand On Activity based,Infographics Practical,Instructor Lead Workshop Practical,Simulation Practical,Video Demonstration	CO1,CO2,CO3,CO4,CO5
3	8	Implement a K-means clustering algorithm (cluster	,T-achine Learning Mastery With P,T-Machine Learning, hand on for ,R-INTRODUCTION TO MACHINE LEAR	Hand On Activity based,Infographics Practical,Instructor Lead Workshop Practical,Simulation Practical,Video Demonstration	CO1,CO2,CO3,CO4,CO5
3	9	Implement Principle Component Analysis.	,T-achine Learning Mastery With P,T-Machine Learning, hand on for ,R-INTRODUCTION TO MACHINE LEAR	Hand On Activity based,Infographics Practical,Instructor Lead Workshop Practical,Simulation Practical,Video Demonstration	CO1,CO2,CO3,CO4,CO5
3	10	Implement Association Rule Mining.	,T-achine Learning Mastery With P,T-Machine Learning, hand on for ,R-INTRODUCTION TO MACHINE LEAR	Hand On Activity based,Infographics Practical,Instructor Lead Workshop Practical,Simulation Practical,Video Demonstration	CO1,CO2,CO3,CO4,CO5

Assessment Model			
Sr No	Assessment Name	Exam Name	Max Marks
1	20PRAC01	External Viva / Voce	40
2	20PRAC01	Experiment-1	30
3	20PRAC01	Experiment-2	30
4	20PRAC01	Experiment-3	30
5	20PRAC01	Experiment-4	30
6	20PRAC01	Experiment-5	30
7	20PRAC01	Experiment-6	30

8	20PRAC01	Experiment-7	30
9	20PRAC01	Experiment-8	30
10	20PRAC01	Experiment-9	30
11	20PRAC01	Experiment-10	30
12	20PRAC01	Mid-Term Test	20

CO vs PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	3	NA	NA	NA	NA	NA	NA	2	NA	NA
CO2	2	3	3	3	2	NA	NA	NA	NA	NA	NA	2	NA	NA
CO3	2	3	2	3	3	NA	NA	NA	NA	NA	NA	2	NA	NA
CO4	2	3	3	3	3	NA	NA	NA	NA	NA	NA	2	NA	NA
CO5	1	3	3	3	3	NA	NA	NA	NA	NA	NA	2	NA	NA
Target	2	3	2.8	3	2.8	NA	NA	NA	NA	NA	NA	2	NA	NA