

# SCHEME OF COURSE WORK

## Department of Computer Science and Engineering

### CSM(Artificial Intelligence and Machine Learning)

#### Course Details:

COURSE TITLE	Artificial Intelligence LAB		
COURSE CODE	22CM1103	L T P C	0 0 3 1.5
PROGRAM	B.TECH		
SPECIALIZATION	CSM		
SEMESTER	III Semester		
PRE-REQUISITES	Machine Learning		
COURSES TO WHICH IT IS A PRE-REQUISITE	Machine Learning		

#### Course Outcomes (COs):

CO1	Make use of Pandas and Numpy Libraries.
CO2	Implement Object Oriented concepts in programming.
CO3	Apply exception handling and user defined exception(s).
CO4	Implement Informed Search Strategies.
CO5	Implement Uninformed Search Strategies.

#### Program Outcomes (POs):

PO 1	Graduates will be able to apply the knowledge of mathematics, science, engineering fundamentals and principles of Computer Science & Engineering to solve complex problems in different domains.
PO 2	Graduates can identify, formulate, study contemporary domain literature and analyze real life problems and make effective conclusions using the basic principles of science and engineering.
PO 3	Graduates will be in a position to design solutions for Engineering problems requiring in-depth knowledge of Computer Science and design system components and processes as per standards with emphasis on privacy, security, public health and safety.
PO 4	Graduates will be able to conduct experiments, perform analysis and interpret data as per the prevailing research methods and to provide valid conclusions.
PO 5	Graduates will be able to select and apply appropriate techniques and use modern software design and development tools. They will be able to predict and model complex engineering activities with the awareness of the practical limitations.
PO 6	Graduates will be able to carry out their professional practice in Computer Science & Engineering by appropriately considering and weighing the issues related to society and culture and the consequent responsibilities.
PO 7	Graduates would understand the impact of the professional engineering solutions on environmental safety and legal issues
PO 8	Graduates will transform into responsible citizens by adhering to professional ethics.
PO 9	Graduates will be able to function effectively in a large team of multidisciplinary streams consisting of persons of diverse cultures without forgetting the significance of each individual's contribution.
PO 10	Graduates will be able to communicate effectively about complex engineering activities with the engineering community as well as the general society, and will be able to prepare reports.
PO 11	Graduates will be able to demonstrate knowledge and understanding of the engineering and management principles and apply the same while managing projects in multidisciplinary environments.
PO 12	Graduates will engage themselves in self and life-long learning in the context of rapid technological changes happening in Computer Science and other domains.

## Course Outcomes (CO) versus Program Outcomes (PO)

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			3	2				1		3	1
CO2	3			2							3	1
CO3	3	2		1							3	1
CO4	3			2							3	1
CO5		3		2	1						3	1

3 - Strongly correlated, 2- Moderately correlated, 1-Poor correlated, Blank - No correlation

## Programme Specific Outcomes (PSOs)

PSO1	Design, develop, test and maintain System and Application software in the area of Artificial Intelligence and Machine Learning for varying domains and platforms.
PSO2	Understand the working of related hardware and software for Artificial Intelligence and Machine Learning to design solutions for real time problems.
PSO3	Design the algorithms to model the automation systems for modernizing contemporary societal, Industrial, organizational and public welfare needs with rational insight.

## Course Outcomes (CO) versus Programme Specific Outcomes (PSOs)

Course Outcome	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3		
CO3	3		
CO4	3		
CO5	3		

3 - Strongly correlated, 2- Moderately correlated, 1-Poor correlated, Blank - No correlation

Assessment Methods	Daily Performance (Record/Observation/Viva): 20 Marks Record: 5Marks, Observation: 10Marks, Viva: 5 Marks Internal Exam : 40 Marks(Exam+Daily Performance) External Exam: 60Marks
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## Teaching- Learning & Evaluation

Week	Topic/ Contents	Course Outcomes	Sample questions	Teaching learning strategy	Assessment method & schedule
1	Numpy Library	CO1	<ol style="list-style-type: none"> <li>Create a numpy array from list, tuple with float type</li> <li>Write a python program to find min, max, sum, cumulative sum of array.</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination-I

2	Numpy Library: Linear Algebra	CO1	<ol style="list-style-type: none"> <li>1. Write a python program to find eigenvalues of matrices</li> <li>2. Write a python program to find matrix and vector products (dot, inner, outer, product), matrix exponentiation.</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
3	Numpy Advanced	CO2	<ol style="list-style-type: none"> <li>1. Perform Sorting, Searching and Counting using Numpy methods.</li> <li>2. Write a program to demonstrate the use of the reshape() method.</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
4	Pandas Library	CO2	<ol style="list-style-type: none"> <li>1. Write a python program to implement Pandas Series with labels.</li> <li>2. Write a program which make use of following Pandas methods i) describe() ii) head() iii) tail() iv) info()</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
5	Pandas Library: Selection	CO2	<ol style="list-style-type: none"> <li>1. Write a program that converts Pandas DataFrame and Series into numpy.array.</li> <li>2. Write a program that demonstrates the column selection, column addition, and column deletion.</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
6	Pandas Library: Visualization	CO3	<ol style="list-style-type: none"> <li>1. Write a program to demonstrate use of groupby() method.</li> <li>2. Write a program to demonstrate pandas Merging, Joining and Concatenating</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
7	Lab Internal Examination- I				
8	Object Oriented Programming: basic	CO3	<ol style="list-style-type: none"> <li>1. Write a python program to demonstrate various kinds of inheritance.</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II
9	Object Oriented Programming: advanced	CO4	<ol style="list-style-type: none"> <li>1. Write a python program to create abstract classes and abstract methods.</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II
10	Exception Handling and User defined exception(s)	CO5	<ol style="list-style-type: none"> <li>1. Write a python program to create user defined exceptions.</li> <li>2. Write a python program to understand the use of else and finally block with try block.</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II
11	Water Jug Problem	CO5	<ol style="list-style-type: none"> <li>1. Write a python program to implement a Water Jug Problem?</li> </ol>	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II

12	Breadth First Search and Depth First Search	CO5	1. Write a program to Implement Breadth First Search using Python. 2. Write a program to Implement Depth First Search using Python.	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II
13	Lab Internal Examination- II				
14	Preparation and End Semester Practical Examination				