

Artificial Intelligence - 417

CLASS -X

Session- 2026-27

Date	Chapter/ Unit	Sub Unit//Learning Outcomes	Demo./Practicals/Session
<p style="text-align: center;">April No.of working days-24</p>	<p style="text-align: center;">Revisiting AI Project Cycle & Ethical Frameworks for AI</p>	<p>AI Project Cycle Understand the stages of the AI Project Cycle. Problem Scoping Data Acquisition Data Exploration</p> <p>Introduction to AI Domains Understand the concept of Artificial Intelligence (AI) domains and the illustrations of practical applications within each AI domain.</p> <p>Ethical Frameworks of AI Learn about the ethical framework for AI and its category. Explore Bioethics, a popular framework that is used in the healthcare industry</p>	<p>AI Project Cycle Data Acquisition /Data Exploration/ Data Visualization https://public.tableau.com/app/discover https://www.kaggle.com/learn/data-visualization https://www.datawrapper.de/ https://playground.tensorflow.org/ Gamified tools for each domain- Data Sciences- Impact Filter (Impact of rise in temperature on different species) https://artsexperiments.withgoogle.com/impactfilter/ CV- Autodraw (It pairs machine learning with drawings from talented artists to help you draw stuff fast.) https://www.autodraw.com/ NLP- Wordtune (AI writing tool that rewrites, rephrases, and rewords your writing) https://www.wordtune.com/ Frameworks, Ethical Framework and need of Ethical Frameworks for AI. Activity: My Goodness https://www.my-goodness.net/</p>
	<p style="text-align: center;">ADVANCE PYTHON</p>	<p>Introduction to Annaconda Understand to work with Jupyter Notebook, Creating virtual environment,</p>	<p>(Introduction to Python) on Jupyter Notebook Installation of Annaconda Coding in Jupyter Notebooks - Operators Precedence Comments in python The print () function The Input() function</p>
<p style="text-align: center;">May No.of working days-6</p>	<p style="text-align: center;">Advance Concepts of Modeling in AI</p>	<p>Revisiting AI, ML, DL Know about the different machine learning Understand AI, ML and DL evaluation.</p> <p>Modeling Familiarize with supervised, unsupervised and reinforcement learning based approach Understand subcategories of Supervised, Unsupervised and deep learning models</p>	<p>Differentiate between AI, ML, and DL Common terminologies used with data</p> <p>Types of AI Models: Rule Based Approach, Learning Based Approach Categories of Machine learning based models: Supervised Learning (https://teachablemachine.withgoogle.com/), Unsupervised Learning (https://experiments.withgoogle.com/ai/drum-machine/view/), Reinforcement Learning Subcategories of Supervised Learning Model: Classification Model, Regression Model Subcategories of Unsupervised Learning Model: Clustering, Association https://teachablemachine.withgoogle.com/ Activity : Infinite Drum Machine to demonstrate Unsupervised learning https://experiments.withgoogle.com/ai/drum-machine/view/</p>
	<p style="text-align: center;">ADVANCE PYTHON</p>	<p>Installing Python Packages Applications of Python Recap of Python Basics</p>	<p>Errors in Python using Jupyter Notebook Compilation of all the functions and operators in Jupyter (Variables, Arithmetic Operators, Expressions, Comparison Operators, logical operators, Assignment Operators, Data Types - integer, float, strings, type conversion, using print() and input() functions</p>
<p style="text-align: center;">July No.of working days-26</p>	<p style="text-align: center;">Advance Concepts of Modeling in AI Evaluating Models</p>	<p>Artificial Neural Networks Understand Neural Networks Understand how AI makes a decision</p> <p>Importance of Model Evaluation Understand the role of evaluation in the development and implementation of AI systems.</p> <p>Splitting the training set data for Evaluation Understand Train-test split method for evaluating the performance of a machine learning algorithm</p>	<p>Activity: Human Neural Network – The Game Suggested Neural Network Activity: https://playground.tensorflow.org/</p> <p>What is evaluation? Need of model evaluation Train-test split</p>
	<p style="text-align: center;">ADVANCE PYTHON</p>	<p>Able to write Python programs using fundamental concepts using Jupyter Notebook.</p>	<p>Coding in the Jupyter Notebook (All the previous code done on IDLE python)</p>

August No.of working days-21	Evaluating Models	<p>Accuracy and Error Understand Accuracy and Error for effectively evaluating and improving AI models</p> <p>Evaluation metrics for classification Different types of evaluation techniques in AI, such as Accuracy, Precision, Recall and F1 Score, and their significance</p> <p>Ethical concerns around model evaluation Understand ethical concerns around model evaluation.</p>	<p>Activity: Find the accuracy of the AI model Evaluation techniques- Underfit, Perfect Fit, OverFit through different graphs and examples</p> <ul style="list-style-type: none"> • The Scenario - Prediction, Reality, True Positive, True Negative, False Positive, False Negative • Confusion Matrix • Activity- to make a confusion matrix based on data given for Containment <p>Activity: Confusion Matrix What is Classification? Classification metrics</p> <p>Activity: Build the confusion matrix from scratch</p> <p>Activity: Calculate the accuracy of the classifier model</p> <p>Activity: Decide the appropriate metric to evaluate the AI model</p> <p>Ethical concerns- Bias, Transparency, Accuracy</p>
	ADVANCE PYTHON	Able to use Python built-in functions and libraries	Codeing in the Jupyter Notebook (All the previous code done on IDLE python)
September No.of working days-24	Statistical Data	<p>Introduction & No code AI tool Define the concept of Statistical Data and understand its applications in various fields. Define No-Code and Low- Code AI. Identify the differences between Code and No-Code AI concerning Statistical Data.</p>	<p>Introduction to Data Science & its applications</p> <p>No-Code and Low-Code. Some no-code tools Orange Data Mining Tool: https://orangedatamining.com/download/</p>
	ADVANCE PYTHON	Submission and assessment of the projects/ Prcatical files	
October No.of working days-21	Statistical Data	<p>Statistical Data: Use Case Walk through Relate AI project stages to the stages of No-Code AI projects Able to use no-code tool Orange Data mining. To perform data exploration, modeling and evaluation with Orange data mining.</p>	<ul style="list-style-type: none"> •Important concepts in Statistics. •Orange data mining •AI project cycle in Orange data mining (Palmer penguins case study) <p>Activity: MS Excel for Statistical Analysis. Link:https://docs.google.com/spreadsheets/d/1f5 G-JXyp7EV2fy1hax47YVaH5gyq8KZy/edit?usp=drive_link&oid=109928090180926267402&rtpof=tr ue&sd=true Case study using Orange data mining (Palmer Penguins). Link: https://drive.google.com/drive/u/0/folders/1fmcRVb-ilTyUhmUv4DWT1BFsaCoQ2BmF</p>
	ADVANCE PYTHON	Control Structures Sequential Statements Lists in Python	<ul style="list-style-type: none"> • Create a list in Python of children selected for science quiz with following names- Arjun, Sonakshi, Vikram, Sandhya, Sonal, Isha, Kartik Perform the following tasks on the list in sequence- <ul style="list-style-type: none"> ○ Print the whole list ○ Delete the name “Vikram” from the list ○ Add the name “Jay” at the end ○ Remove the item which is at the second position. • Create <ul style="list-style-type: none"> ○ a list num=[23,12,5,9,65,44] Print the length of the list ○ Print the elements from second to fourth position using positive indexing ○ Print the elements from position third to fifth using negative indexing • Create a list of first 10 even numbers, add 1 to each list item and print the final list. • Create a list List_1=[10,20,30,40]. Add the elements [14,15,12] using extend function. Now sort the final list in ascending order and print it.
	EMPLOYABILITY SKILLS	Unit 1: Communication Skills-II Unit 2: Self-management Skills-II	

November No.of working days-21	Natural Language Processing	<p>Introduction Comprehend the complexities of natural languages. and elaborate on the need for NLP techniques for machines to understand various natural languages effectively.</p> <p>Applications of Natural Language Processing Explore the various applications of NLP in everyday life, such as , voice assistants, auto generated captions, language translation, sentiment analysis, text classification and keyword extraction.</p> <p>Stages of Natural Language Processing (NLP) Understand the concepts like lexicon, syntax, semantics, and logical analysis of input text.</p> <p>Chatbots Understand the concept of chatbot and the differences between smartbots and script bots.</p> <p>Concepts of Natural Language Processing:</p> <p>Text Processing Learn about the Text Normalization technique used in NLP and the popular NLP model - Bag-of-Words</p> <p>Natural Language Processing: Use Case Walkthrough Explore the sentiment analysis process using real-life datasets with the Orange Data Mining tool.</p>	<p>Various real-life applications of NLP Activity: Keyword Extraction https://cloud.google.com/natural-language Activity: Play with chatbots Elizabot - https://www.masswerk.at/elizabot/ Mitsuki - https://www.kuki.ai/ Cleverbot - https://www.cleverbot.com/ Singtel - https://www.singtel.com/personal/support Session: Script Bot V/s Smart Bot Hands-on: Text processing ●Data Processing ●Bag of Words ●TFIDF Examples of Code and No-code NLP Tools Applications of NLP- Introduction to Sentiment Analysis Hands-on: Case Walkthrough – Steps involved in project development Link to steps and dataset: https://drive.google.com/drive/u/2/folders/1geFLXxV5890kfcakMfEg_KsH1LPcS_lz</p>
	EMPLOY/ABILITY SKILLS	<p>Unit 3: Information and Communication Technology Skills-II Unit 4: Entrepreneurial Skills-I Unit 5: Green Skills-I</p>	
December No.of working days-24	COMPUTER VISION	<p>Introduction Define the concept of Computer Vision and understand its applications in various fields.</p> <p>Concepts of Computer Vision Understand the basic concepts of image representation, feature extraction, object detection, and segmentation.</p> <p>No-Code AI Tools To demonstrate proficiency in using no-code AI tools for computer vision projects. To deploy models, fine-tune parameters, and interpret results. Skills acquired include data preprocessing, model selection, and project deployment</p> <p>Image Features & Convolution Operator Apply the convolution operator to process images and extract useful features.</p> <p>Convolution Neural Network Understand the basic architecture of a CNN and its applications in computer vision and image recognition</p>	<p>Applications of CV Computer Vision Tasks Basics of Images-Pixel, Resolution, Pixel value Grayscale and RGB images Introduction to Lobe: https://www.lobe.ai/ Teachable Machine: https://teachablemachine.withgoogle.com/ Activity: Build a Smart Sorter Orange Data Mining Tool: https://orangedatamining.com/download/ Activity: Build a real-world Classification Model: Coral Bleaching (Use Case Walkthrough) Link to the steps involved in project development and dataset: https://drive.google.com/drive/folders/1ppJ4d-8yOFJ2G22rHHpjNrK0ejdLAe5Q?usp=sharing Activity: Convolution Operator Understanding CNN Kernel Layers of CNN Testing CNN</p>
	EMPLOY/ABILITY SKILLS		
January No.of working days-17	Submission and assessment of the projects/ Practical files		
February No.of working days-	Annual Examination		

Project Work / Field Visit / Student Portfolio
Suggested Projects/ Field Visit / Portfolio (any one activity to be one)

Sample Projects	<p>AI Project Development Using</p> <ul style="list-style-type: none"> • Statistical Data for AI: Prediction of palmer penguin species • Computer Vision: Early detection of coral bleaching • Natural Language Processing: Sentiment Analysis
Field Work	<p>Students' participation in the following-</p> <ul style="list-style-type: none"> • AI for Youth Bootcamp • AI Fests/ Exhibition • Participation in any AI training sessions • Virtual tours of companies using AI to get acquainted with real-life usage
Student Portfolio	<ul style="list-style-type: none"> • Maintaining a record of all AI activities • Hackathons • Competitions (CBSE/Interschool) <p>Note: Portfolio should contain minimum 5 activities</p>