Artificial Intelligence - 417

CLASS -X **Session- 2025-26**

Date	Chapter/ Unit	Sub Unit//Learning Outcomes	Demo./Practicals/Session
April No.of working days-22	Revisiting AI Project Cycle & Ethical Frameworks for AI	**AI Project Cycle** Understand the stages of the AI Project Cycle. Problem Scoping Data Acquisition Data Exploration **Introduction to AI Domains** Understand the concept of Artificial Intelligence (AI) domains and the illustrations of practical applications within each AI domain. **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	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/
	ADVANCE PYTHON	Introduction to Annaconda Understand to work with Jupyter Notebook, Creating virtual environment,	(Introduction to Python) on Jupyter Notebook Installation of Annaconda Coding in Jupyter Notebooks - Opertators Presedence Comments in python The print () function The Input() function
May No.of working days-19	Advance Concepts of Modeling in AI	**Revisiting AI, ML, DL** Know about the different machine learning Understand AI, ML and DL evaluation. **Modeling** Familiarize with supervised, unsupervised and reinforcement learning based approach Understand subcategories of Supervised, Unsupervised and deep learning models	Differentiate between AI, ML, and DL Common terminologies used with data 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.withgoogl e.com/ Activity : Infinite Drum Machine to demonstrate Unsupervised learning https://experiments.withgoogle.com/ai/drum-machine/view/
	ADVANCE PYTHON	Installing Python Packages Applications of Python Recap of Python Basics	Errors in Python using Jupyter Notebook Compliation of all the funtions 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
July No.of working days-26	Advance Concepts of Modeling in AI Evaluating Models	**Artificial Neural Networks** Understand Neural Networks Understand how AI makes a decision **Importance of Model Evaluation** Understand the role of evaluation in the development and implementation of AI systems. **Splitting the training set data for Evaluation** Understand Train-test split method for evaluating the performance of a machine learning algorithm	Activity: Human Neural Network – The Game Suggested Neural Network Activity: https://playground.tensorflow.org/ What is evaluation? Need of model evaluation Train-test split
	ADVANCE PYTHON	Able to write Python programs using fundamental concepts using Jupyter Notebook.	Coding in the Jupyter Notebook (All the previous code done on IDLE python)

August **No.of working days-23**	Evaluating Models	**Accuracy and Error** Understand Accuracy and Error for effectively evaluating and improving AI models **Evaluation metrics for classification** Different types of evaluation techniques in AI, such as Accuracy, Precision, Recall and F1 Score, and their significance **Ethical concerns around model evaluation** Understand ethical concerns around model evaluation.	Activity: Find the accuracy of the AI modelEvaluation techniques- Underfit, Perfect Fit, OverFit throug different graphs and examples ● 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 Activity: Confusion Matrix What is Classification? Classification metrics Activity: Build the confusion matrix from scratch Activity: Calculate the accuracy of the classifier model Activity: Decide the appropriate metric to evaluate the AI model Ethical concerns- Bias, Transparency, Accuracy
	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-23**	Statistical Data	**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.	Introduction to Data Science & its applications No-Code and Low-Code. Some no-code tools Orange Data Mining Tool: https://orangedatamining.com/download/
	ADVANCE PYTHON	Submission and assessment of the projects/ Prcatical files	
October **No.of working days-18**	Statistical Data	**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.	•Important concepts in Statistics. •Orange data mining •AI project cycle in Orange data mining (Palmer penguins case study) Activity: MS Excel for Statistical Analysis. Link:https://docs.google.com/spreadsheets/d/1f5 G-JXyP7EV2fy1hax47YVaH5gyq8KZy/edit?usp=dri ve_link&ouid=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
	ADVANCE PYTHON	Control Structures Sequential Statements Lists in Python	• 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- ○ 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 ○ 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-23**	Natural Language Processing	**Introduction** Comprehend the complexities of natural languages. and elaborate on the need for NLP techniques for machines to understand various natural languages effectively. **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. **Stages of Natural Language Processing (NLP)** Understand the concepts like lexicon, syntax, semantics, and logical analysis of input text. **Chatbots** Understand the concept of chatbot and the differences between smartbots and script bots. **Concepts of Natural Language Processing:** **Text Processing** Learn about the Text Normalization technique used in NLP and the popular NLP model - Bag-of-Words **Natural Language Processing:** Use Case Walkthrough Explore the sentiment analysis process using real-life datasets with the Orange Data Mining tool.	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/1geFLXx V5890kfcakMfEg_KsH1LPcS_Iz
December **No.of working days-25**	EMPLOYABILITY SKILLS	Unit 3: Information and Communication Technology Skills-II Unit 4: Entrepreneurial Skills-I Unit 5: Green Skills-I	
	COMPUTER VISION	**Introduction** Define the concept of Computer Vision and understand its applications in various fields. **Concepts of Computer Vision** Understand the basic concepts of image representation, feature extraction, object detection, and segmentation. **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 deploymen **Image Features & Convolution Operator** Apply the convolution operator to process images and extract useful features. **Convolution Neural Network** Understand the basic architecture of a CNN and its applications in computer vision and image recognition	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/1ppJ 4d-8yOFJ2G22rHHpjNrK0ejdIAe5Q?usp=shar ing Activity: Convolution Operator Understanding CNN Kernel Layers of CNN Testing CNN
January No.of working days-13	Submission and assessment of the projects/ Prcatical files		
Februar y No.of workin g days-	Annual Examination		

Project Work / Field Visit / Student Portfolio

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

Sample Projects	AI Project Development Using • Statistical Data for AI: Prediction of palmer penguin species • Computer Vision: Early detection of coral bleaching • Natural Language Processing: Sentiment Analysis
Field Work	Students' participation in the following- • 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	• Maintaining a record of all AI activities • Hackathons • Competitions (CBSE/Interschool) Note: Portfolio should contain minimum 5 activities