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Class IX

DECODING ARTIFICIAL INTELLIGENCE

LESSON PLANS

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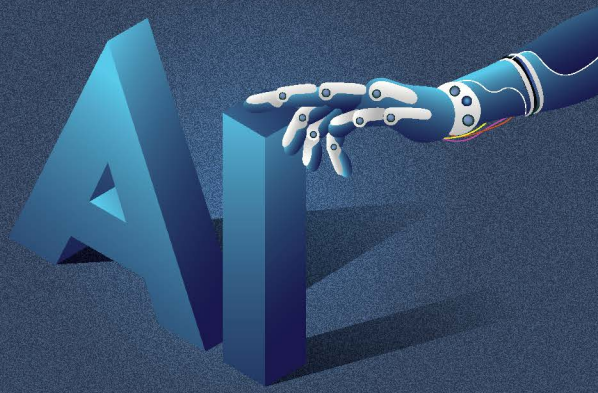

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Decoding Artificial Intelligence–IX

LESSON PLANS

Unit 1: AI Reflection, Project Cycle & Ethics

Theory Sessions (30 Hours)

Hour	Topic	Timeline & Activities (Aligned with Chapter Content)	Tools/Examples
1	Introduction	0–20 min: Warm-up (Discuss about AI and its emerging applications). 20–40 min: Discussion about the usefulness of AI for students. 40–50 min: Quote discussion. 50–60 min: Recap & Q&A.	Remarkable quotes by great personalities.
2	What is AI?	0–10 min: Understanding AI. 10–25 min: Defining AI as 'simulation of human intelligence'. 25–35 min: Fun Fact–'AI is not Limited to Computers' 35–50 min: Fun Time–'Quick, Draw!', a Machine Learning game. 50–60 min: Share ideas.	Fun Fact and Fun Time sections
3	Traditional Computer Tasks vs AI	0–15 min: Introduce traditional computer tasks. 15–30 min: Discuss Tasks that require Human Intelligence 30–50 min: DIY: Understanding Human Intelligence (differentiate tasks) 50–60 min: Share ideas.	Do It Yourself section for self-practice
4	Potential & History of AI	0–15 min: Introduce and discuss the Potential of AI. 15–30 min: Discuss 'A Note of Caution', which points towards the potential risks. 30–50 min: Discuss History of AI. 50–60 min: Recap.	Timeline of History of AI
5	Associated Fields of AI	0–25 min: Discuss various fields of AI. 25–35 min: Fun Fact – 'Don't say AI-ML'. 35–50 min: DIY – Match the Columns (problem statements with their respective AI Subfield). 50–60 min: Discuss emerging fields associated with AI.	Do It Yourself and Fun Fact
6	AI Classification	0–15 min: Introduce types of AI. 15–35 min: Understand Weak AI (Narrow AI). 35–50 min: Understand Strong AI (General AI). 50–60 min: Discuss tasks that AI can do and tasks that AI can't do.	Tabular Differentiation

7	AI is Everywhere!	0–15 min: Intro to capabilities of AI. 15–35 min: Some popular use cases of AI. 35–50 min: DIY: 'Should we use AI for these Tasks?' (choose tasks that can be done by AI) 50–60 min: Recap	DIY for self-practice
8	Domains of AI	0–15 min: Introduce domains of AI. 15–35 min: Discuss Data Science (Data Statistics). 35–50 min: Fun Time – Rock, Paper, Scissors (AI-enabled game). 50–60 min: Recap.	AI-enabled game - 'Rock, Paper, Scissors'
9	Domains of AI (contd.)	0–20 min: Natural Language Processing (NLP). 20–35 min: Fun Time – Semantris (game based on NLP). 35–50 min: Discuss components of NLP. 50–60 min: Recap.	Semantris
10	Domains of AI (contd.)	0–25 min: Introduce Computer Vision. 25–35 min: Discuss common Computer Vision tasks. 35–50 min: DIY: 'Letter to Your Future Self in 2050" 50–60 min: Test Your Knowledge.	Letter to the Future Self and Test Your Knowledge section for practice.
11	Some AI Application	0–20 min: Face Lock in Smartphone. 20–40 min: Fraud Risk Detection. 40–55 min: Medical Imaging. 55–60 min: Discuss challenges.	Applications
12	AI Project Cycle - Problem Scoping	0–10 min: Introduce AI Project Cycle and its definition. 10–20 min: Discuss steps involved in AI Project Cycle. 20–35 min: Getting started with Problem Scoping, 4Ws Problem Canvas and Problem Statement Template. 35–40 min: Case Study: Crop Disease Detection in AI Platform. 40-50 min: Discuss Mapping the Problem to the AI Project Cycle. 50-60 min: Creating an AI model for Early Blight Detection in Tomatoes using Teachable Machine.	4Ws Problem Canvas, Problem Statement Template, Teachable Machine
13	Data Acquisition	0–10 min: Discuss the Importance of Data. 10–20 min: What is Data Acquisition? 20–30 min: Understand Data Features and differences between Human vs AI while learning from Data Features 30–45 min: Case Study: Elderly Health Prediction. 45–60 min: Discuss 'Reliable' sources of acquiring data.	Elderly Health Prediction Project

14	System Maps	0–20 min: Understand the concept of System Maps. 20–40 min: Activity: 'System Maps'. 40–60 min: Self-practice for 'Test Your Knowledge'.	System Maps
15	Data Exploration	0–10 min: Quote discussion and Introduction. 10–25 min: Introduce Data Visualization and its importance. 25–45 min: Visualizing sample data for better understanding. 45–60 min: Advantages of Data Visualization	
16	Data Exploration (contd.)	0–10 min: Understand the concept of Plotting Data. 10–30 min: Discuss different categories of Data Stories. 30–45 min: Discuss Data Visualization Tools. 45–60 min: Understand the Data Visualization Catalogue.	Visualization Tools: Excel, Power BI, Matplotlib, etc.
17	Data Exploration (contd.)	0–20 min: DIY: Hands-on Data Visualization Catalogue. 20–40 min: Perform Data Exploration Activity–Sketchy Graphs. 40–60 min: DIY: Tracking Student Career Choices in Higher Education.	Data Visualization Catalogue
18	AI Modelling	0–20 min: Introduce AI, Machine Learning and Deep Learning. 20–40 min: Understand the concept of modelling and its types. 40–60 min: Discuss Decision Trees and its components.	Decision Trees
19	AI Modelling (contd.)	0–15 min: Understand the Working of Decision Trees. 15–30 min: Case Study: 'Creating a Decision Tree'. 30–40 min: Discuss when and when not to use Decision Trees. 40–50 min: Activity: 'Spot the Elephant'. 50–60 min: Understanding Pixels.	Decision Trees
20	Evaluation	0–15 min: Understanding the Evaluation phase of the AI Project Cycle. 15–40 min: Understanding Different Types of ML Metrics. 40–60 min: Classification & Regression Metrics.	Accuracy and Error
21	Evaluation Methods	0–30 min: Introduction of evaluation methods like train-test, cross-validation, and confusion matrix. 30–60 min: Understanding True Positive, True Negative, False Positive and False Negative.	Confusion Matrix

22	Evaluation Methods (contd.)	0–25 min: DIY: Confusion Matrix. 25–50 min: Understand ROC-AUC Curve. 50–60 min: Recap	Receiver Operator Characteristic Curve
23	Deployment	0–25 min: Introduction to the Development of AI models. 25–50 min: Understanding the Steps involved in the Deployment Process. 50–60 min: Recap	Testing and Validation
24	Deployment (contd.)	0–20 min: Understand the Examples of AI Development. 20–45 min: AI Deployments in Smartphones. 45–60 min: Discussion on emerging deployment of AI in other domains.	Smartphone Applications
25	Ethics in AI	0–25 min: Introduction to Ethics for AI 25–50 min: Fun Time: Watch a video on ethical scenarios. 50–60 min: Recap	Ethical Prospective
26	Ethics vs Morals	0–25 min: Comparison between Ethics and Morals. 25–50 min: Discuss Paired Examples: Ethics vs Morals. 50–60 min: Recap.	Paired Examples such as Hiring, fair treatment, etc.
27	Moral Machine	0–60 min: Activity: AI Ethics – Moral Machine.	Moral Machine
28	AI Ethics	0–20 min: Understand the Importance of AI Ethics. 20–40 min: Case Studies: Depicting the importance of AI ethics. 40–60 min: Experience AI: 'Creating a DEEPFAKE Video'.	DEEPFAKE
29	AI Ethics: Principles	0–20 min: Understand principles of ethics in AI. 20–40 min: Understanding the concept of Human Rights. 40–60 min: Understanding the concept of Bias.	Principles
30	AI Ethics: Principles (contd.)	0–20 min: Case Studies: 'Amazon's Gender-Biased Hiring Tool' and 'Racial Bias in Facial Recognition Systems'. 20–35 min: Understanding the concept of Privacy. 35–50 min: Understanding the concept of Privacy. 50–60 m: Recap	Principles

Unit 2: Data Literacy

Theory Sessions (22 Hours)

Hour	Topic	Timeline & Activities (Aligned with Chapter Content)	Tools/Examples
1	Introduction	0–20 min: Warm-up (Discuss Data). 20–30 min: Quote Discussion. 30–50 min: Discussion on Data Literacy 50–60 min: Recap & Q&A.	Remarkable quotes by great personalities.
2	What is Data?	0–10 min: Understanding Data. 10–30 min: Defining Data in Computing. 30–40 min: DIY– Describing image data. 40–50 min: Fun Time – 'Play a Guessing Game'. 50–60 min: Share ideas.	Guessing Game
3	What is Data? (contd.)	0–20 min: Understanding Data vs Information. 20–30 min: Discuss and understand the meaning of 'Context'. 30–45 min: Define Information with the help of illustration. 45–60 min: Differentiating between data and information.	Illustrations explaining the difference between the data and information.
4	DIKW Model	0–25 min: Introduce the DIKW model and DIKW pyramid. 25–45 min: Case Study: 'Understanding DIKW Model'. 45–55 min: DIY: DIKW Matching. 55–60 min: Recap.	DIKW Model
5	Introduction to Data Literacy	0–25 min: Introduce Data Literacy and discuss steps to acquire it. 25–35 min: Discuss Data Analysis, Graphs, Charts and Algorithm. 35–50 min: Importance of Data Literacy. 50–60 min: Recap.	Data Analysis, Graphs and Charts
6	Data Literacy (contd.)	0–20 min: Understand Impact of Data Literacy. 20–40 min: Case Study: Data literacy Impact Stories. 40–50 min: DIY: 'How reliable is the news?'. 50–60 min: Recap.	Do It Yourself for self-practice
7	Data Literacy (contd.)	0–30 min: Discuss how to become data literate? 30–40 min: Understand the terms such as Mean, Median, Mode, Data Visualization Tools, and bias. 40–55 min: Understand the Data Literacy Process Framework. 55–60 min: Recap	Graphs and Charts, Critical Thinking

8	Data Security & Privacy	0–20 min: Introduce data security and privacy with examples. 20–35 min: Discuss the increasing importance of data security and privacy. 35–55 min: Case Studies: Related to Data Security and Privacy. 55–60 min: Recap.	WhatsApp and DigiLocker Case Study
9	Data Security & Privacy (contd.)	0–10 min: DIY: Research about DigiLocker. 10–30 min: Discuss Exposure to Cybercrimes. 30–40 min: Experience AI: Play 'Interland' by Google. 40–55 min: Discuss the initiatives taken by the Indian Government. 55–60 min: Recap.	'Interland' by Google
10	Data Privacy, Security and Artificial Intelligence	0–25 min: Introduce data privacy and security in Artificial Intelligence. 25–35 min: Case Study: 'The importance of Fair Training Data' 35–55 min: Discuss cybersecurity best practices. 55–60 min: Fun Time: Watch video to avoid being victim of scams, phishing, etc.	Cybersecurity Practices
11	Acquiring, Processing and Interpreting Data	0–20 min: Discuss about acquiring, processing and interpreting data. 20–50 min: Understand where does data comes from? 50–55 min: Discuss the term 'Relevant Information'. 55–60 min: Discuss challenges.	Acquiring and Processing of Data
12	Variables & Types of Data	0–20 min: Introduce variables and discuss their use. 20–40 min: Discuss types of variables: Numerical & Categorical variables. 40–60 min: Understand different types of data.	Understanding variables and types of data
13	Types of Data	0–20 min: Understand categorization by data property (including Case Study: Example of Quantitative and Qualitative Data). 20–40 min: Understand categorization by data organization. 40–60 min: Understand categorization by application.	Quantitative and Qualitative Data
14	Data Acquisition	0–20 min: Introduce Data Acquisition. 20–40 min: DIY: Data acquisition task. 40–60 min: Define and understand what are data sources?	Data Collection Methods
15	Types of Data Sources	0–25 min: Primary vs Secondary Data Sources. 25–50 min: Discuss primary data collection techniques. 50–60 min: Recap.	Surveys, Polls, Interview, etc.

16	Types of Data Sources (contd.)	0–20 min: Discuss primary data collection techniques. 20–35 min: DIY: Classifying data collection methods. 35–45 min: Discuss Best Practices for Data Acquisition. 45–60 min: Case Study: Collecting Data from Websites.	Government Records and Internal Records of an organization
17	Features of Data	0–25 min: Understand and discuss features of data 25–50 min: Discuss the important terminologies followed in AI systems. 50–60 min: Recap and discussion.	Model learns with dependent and independent variables
18	Data Preprocessing	0–20 min: Understand the concept of data preprocessing. 20–35 min: Discuss usability of data. 35–60 min: Understand data preprocessing and its interpretation.	Handling missing values, Outlier Detection, etc.
19	Data Interpretation	0–15 min: Understand Data interpretation. 15–40 min: Analyze and discuss methods of Data Interpretation. 40–50 min: DIY: Find out the type of interpretation. 50–60 min: Fun Time: 'Trend Analysis'.	Trend Analysis
20	Data Interpretation (contd.)	0–25 min: Understanding types of data interpretation. 25–45 min: DIY: Interpret the given data. 45–60 min: DIY: Pie Charts.	Data Interpretation tools like Pie Charts
21	Data Interpretation (contd.)	0–25 min: DIY: Bar Charts. 25–35 min: Discuss advantages and disadvantages of each type of data interpretation. 35–50 min: DIY: Line Graphs. 35–60 min: Discuss importance of data interpretation.	Graphical Representation Methods
22	Project	0–60 min: Interactive Data	Tableau

Unit 3: Mathematics for AI (Statistics & Probability)

Theory Sessions (12 Hours)

Hour	Topic	Timeline & Activities (Aligned with Chapter Content)	Tools/Examples
1	Introduction	0–20 min: Warm-up (Discuss Statistics for AI). 20–45 min: Discuss the Importance of Maths in AI. 45–50 min: Quote Discussion. 50–60 min: DIY: Probability and Statistics Question.	Remarkable quotes by great personalities.

2	Mathematics in AI	0–20 min: Discuss Application of Mathematics in AI. 20–45 min: Discuss the Importance of Mathematical concepts for understanding AI. 45–60 min: Share ideas.	Statistics & Algebra
3	Statistics	0–20 min: Introduce Statistics. 20–30 min: Define What is Statistics? 30–50 min: Understand Statistics in the Cricket Way! 50–60 min: Recap & Discussion.	Cricket Statistics
4	Statistics (contd.)	0–25 min: Introduce frequency, tally and dot plots. 25–45 min: Understand the above terms with the help of the given illustrations. 45–55 min: Fun Time: Count the Frequency. 55–60 min: Recap.	Frequency, Tally and Dot Plots
5	Statistics (contd.)	0–25 min: discuss What does statistics do? 25–50 min: Discuss applications of statistics. 50–60 min: Recap.	Forecasting and Management Applications
6	Statistics (contd.)	0–20 min: Activity: Spot the Car! 20–40 min: Activity: Social Media Stats. 40–60 min: Activity: Sporting Champions.	Activities for self-practice
7	Probability	0–30 min: Introduction to Probability. 30–40 min: Understand the probability theorem. 40–60 min: Probability in Data Science.	Random Guesses vs Educated Guesses
8	Probability (contd.)	0–30 min: Discuss probability terminology. 30–40 min: Activity: Understand Chance Events. 40–55 min: Discuss the range of the probability (0% to 100%) 55–60 min: Recap.	Chance Events
9	Probability (contd.)	0–25 min: Discuss non-technical terminology of probability. 25–50 min: Understanding Probability Terms. 50–60 min: Recap.	Likely and Unlikely Events, Chance and Impossible are some important terms
10	Probability (contd.)	0–15 min: Fun Time: What's for the class today? 15–30 min: Understand the calculation of probability. 30–45 min: DIY: Probability in Bets (Calculating Probability) 45–60 min: Activity: Calculating Probability	Probability Formula

11	Descriptive Statistics vs Inferential Statistics	0–20 min: Discuss about descriptive statistics vs inferential statistics. 20–40 min: Differentiate between descriptive statistics vs inferential statistics. 40–55 min: Activity: The Weather Game. 55–60 min: Discuss challenges.	Weather Game
12	Applications	0–45 min: Use of Probability in Different Applications. 45–60 min: Recap.	Graphs and Charts used for Applications of Probability

Unit 4: Generative AI

Theory Sessions (8 Hours)

Hour	Topic	Timeline & Activities (Aligned with Chapter Content)	Tools/Examples
1	Introduction to Generative AI	0–20 min: Warm-up discussion on Generative AI 20–25 min: Quote Discussion. 25–45 min Define Generative AI. 45–50 min: Quote Discussion. 50–60 min: Recap	Remarkable quotes by great personalities.
2	Generative AI	0–15 min: Discuss key drivers of Generative AI. 15–40 min: Discuss Evolution of Generative AI. 40–60 min: Discuss Application of Generative AI.	Generative AI Timeline
3	Generative AI (contd.)	0–10 min: Fun Time: Explore Intel's contribution in Generative AI. 10–25 min: Understand the unlimited horizons of Generative AI. 25–35 min: Compare Generative AI vs Traditional AI. 35–50 min: Discuss types of Generative AI. 50–60 min: Recap & Discussion.	AI-Generated Content
4	Generative AI (contd.)	0–15 min: Introduce and understand GANs. 15–30 min: DIY: GANs in Action. 30–45 min: Introduce and understand RNNs. 45–60 min: Introduce and discuss Variational Autoencoders (VAEs).	GANs, RNNs and VAEs
5	Generative AI (contd.)	0–10 min: DIY: Use Kidgeni to generate content. 10–20 min: Discuss examples of Generative AI. 20–30 min: Fun Time: Experience Generative AI. 30–40 min: Fun Time: Use Generative AI for various activities. 40–50 min: Discuss the benefits and limitations of using Generative AI. 50–60 min: Discuss the use of Generative AI tools in real-world scenarios.	Kidgeni

6	Ethical Consideration	0–25 min: Discuss various Social Beneficial uses of Generative AI. 25–50 min: Discuss Ethical Considerations in using Generative AI. 50–60 min: Recap.	Social benefits such as Healthcare, Biotechnology, etc.
7	Negative Impact on Society	0–30 min: Discuss the potential negative impact of Generative AI. 30–55 min: Understand the term 'Energy Usage Concerns'. 55–60 min: Recap.	Bias, Discrimination, Privacy Concerns, etc.
8	Probability (contd.)	0–30 min: Discuss responsible use of Generative AI. 30–50 min: Specifically discuss responsible use of AI for students. 50–60 min: Open discussion among students.	Generative AI in Science Experiment

Unit 5: Introduction to Python

Practical Sessions (10 Hours)

Hour	Topic	Timeline & Activities (Aligned with Chapter Content)	Tools/Examples
1	Computer Programming	0–20 min: Warm-up discussion about Computer Programming. 20–45 min: Discuss terms like logic and flow, pseudocode, and algorithms and its characteristics. 45–50 min: Quote Discussion. 50–60 min: DIY: Writing algorithm.	Remarkable quotes by great personalities.
2	Computer Programming (contd.)	0–20 min: Discuss Flow Charts. 20–45 min: Understand Flow Chart symbols. 45–60 min: DIY: Design Flow Charts.	Flow Charts
3	Introduction to Programming	0–20 min: Introduce programming languages. 20–40 min: Discuss various AI programming Languages. 40–55 min: Activity: CODECOMBAT - A Coding Game. 55–60 min: Recap & Discussion.	CODECOMBAT
4	Python	0–20 min: Introduce Python. 20–45 min: Understand suitability of Python for AI. 45–60 min: Discuss applications of Python and its installation.	Python Installation
5	Python (contd.)	0–25 min: Discuss about Interactive mode and Script mode in Python. 25–50 min: Understand Python building blocks: Statements and Expressions. 50–60 min: DIY: Identify Expressions and Statements.	Python IDLE Tool

6	Python (contd.)	0–25 min: Understand Keywords and Identifiers in Python. 25–50 min: Discuss Python variables. 50–60 min: DIY: Print Python function.	Python IDLE Tool
7	Python (contd.)	0–30 min: Understand creating and assigning variables. 30–50 min: DIY: Identifying Valid and Invalid Variable names in Python. 50–60 min: Recap.	Python IDLE Tool
8	Python (contd.)	0–20 min: Understand Data Types in Python. 20–40 min: Discuss Python Operators. 40–55 min: DIY: Using Python Operators.	Operators
9	Python (contd.)	0–25 min: Discuss about Python Input and Output. 25–60 min: Understanding Python Conditional Control Statements.	if-else, for loop and while loop
10	Data Collection in Python	0–15 min: Introduce Data Collection in Python. 15–30 min: Understand Lists in Python 30–55 min: Understand applying various operations on Lists in Python. 55–60 min: Recap and discussion.	Lists