Class 10

LESSON PLAN

Artificial Intelligence

Part-A: Employability Skills

1. Communication Skills-II

Teaching Objectives

Students will learn about

- Communication
- Communication Cycle
- Impact of Body Language
- Effective Communication
- 7Cs of Effective Communication
- Measures to Overcome Barriers in Effective Communication
- Basic Writing Skills
- Parts of Speech
- Learning Objectives of Effective Communication
- Different Methods of Communication
- Feedback
- Principles of Effective Communication
- Barriers in Effective Communication
- What is a Sentence?
- Use of Articles

Teaching Plan

Number of Periods
Theory
10

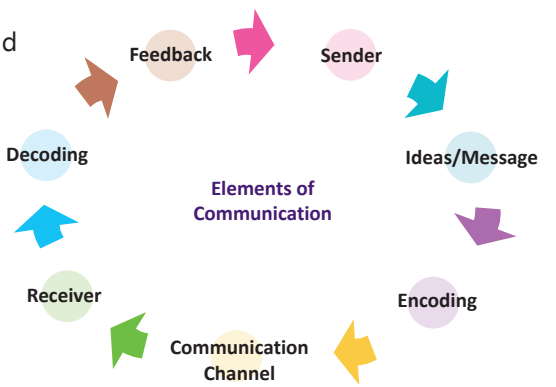
While teaching this chapter, tell the students that the word 'Communication' comes from the Latin word 'Communicare', means 'to share'.

Share the learning objectives of effective communication with the students:

- Development of interpersonal skills
- Sending, receiving and understanding the message or information
- To express effectively with maximum efficiency.

Explain the communication cycle to the students and the phases it involves:

- Sender
- Message
- Encoding
- Communication Channel
- Receiver
- Decoding
- Response/Feedback



Show the students the Methods and Types of Communication along with its advantages and disadvantages:

- Verbal Communication
- Public Speaking
- Non-Verbal Communication
- Visual Communication

Tell the students about the importance of feedback and barriers in effective communication.

Define the types of barriers and measures to overcome barriers to the students in easy language for better understanding where:

Types of barriers are:

- Physical
- Psychological
- Linguistic
- Cultural
- Mechanical

Measure to overcome barriers are:

- Eliminating Differences in Perception
- Use of Simple Language
- Reduction and Elimination of Noise Level
- Active Listening
- Proper Media Selection

Show the students the principles of effective communication and also explain the 7Cs of communication with their aspects like:

- Concise
- Concrete
- Correct
- Clarity
- Coherent
- Complete
- Courteous

Explain the following to the students with their proper purpose in detail:

- Sentence and its Kind
- Phrase
- Parts of Sentence
- Parts of Speech
- Articles
- Construction of a Paragraph

Explain the following to the students with proper examples:

- Effective Communication
- Principles of effective communication
- 7Cs of effective communication
- Basic Writing skills
- What is a sentence?
- Types of sentences

Ask the students to solve the task given on pages number 19, 38 and 39 as **AI Task**.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Communication?

Q. What are the method of communication?

Q. Explain communication cycle.

Q. Write about the importance of feedback.

Q. Explain the barriers in effective communication.

Q. Explain the 7Cs of communication.

Q. Define:

a. Sentence and its Kind
b. Phrase
c. Parts of Sentence
d. Parts of Speech
e. Articles
f. Construction of a Paragraph

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 44 to 51 in the main course book as **AI Quiz**, **Exercise** and **Unsolved Questions**.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 51 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

2. Self Management Skills-II

Teaching Objectives

Students will learn about

- What is Stress?
- What is Stress Management?
- Steps to Manage Stress
- How can Students Manage Stress?
- How to Become Self-Reliant
- Stress Causing Agents
- Need of Stress Management
- Stress Management Techniques
- Working Independently
- Time Management and Its Importance

Teaching Plan

Number of Periods
Theory
10

While teaching this chapter, tell the students that self-management is the modus of applying and using one's self characteristics in a righteous and responsible way.

Introduce the students to Stress and also explain them how to manage stress & work independently.

Share the agents that causes stress with the students in details:

- Mental
- Physical
- Social
- Financial

Tell the students what measure are to be followed to reduce stress:

- Physical Exercise
- Time Management
- Yoga
- Meditation
- Enjoyment
- Vacation
- Nature Walks

Explain the following to the students in detail:

- What is stress management?
- Need of stress management

- Steps to manage stress
- How can students manage stress?

Share the information about self-awareness to the students which are further divided into external and internal.

Tell the students about self-motivation and how to get motivated while using real life examples.

Explain the meaning of self-regulation to the students.

Ask the students to solve the task given on pages number 60, 61 and 62 as **AI Task**.

Extension

Ask the students some oral questions based on this chapter.

Q. What is self-management?
Q. What is stress?
Q. What measure can be taken to reduce stress?
Q. What is self-awareness?
Q. What is self-motivation?
Q. What is self-regulation?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 65 to 70 in the main course book as **AI Quiz**, **Exercise** and **Unsolved Questions**.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 70 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

3. ICT Skills-II

Teaching Objectives

Students will learn about

- ☞ Computer System— Introduction
- ☞ Windows 10 Operating System
- ☞ What is a Folder?
- ☞ Computer Care and Maintenance
- ☞ Preparing Maintenance Schedule
- ☞ Increasing Computer Performance
- ☞ Protecting Computer against Viruses
- ☞ What are Temporary Files?
- ☞ Cookies
- ☞ Operating System
- ☞ What is a File?
- ☞ Creating and Managing Files and Folders
- ☞ Cleaning Computer Components
- ☞ Creating a Backup of Your Data
- ☞ Removing Spam Email from Your Computer
- ☞ Protecting Your Data
- ☞ Firewall

Teaching Plan

Number of Periods
Theory
10

Before While teaching this chapter, tell the students that an operating system refers to the set of programs that provides an interface to use the resources of computer system effectively and efficiently.

Define the meaning, importance and role of an operating system to the students.

Explain the classification of operating system to the students:

- On the basis of interface
- On the basis of number of users
- On the basis of programming
- Other classifications

Tell the students about the functions of operating system in detail.

Explain the following to the students in detail:

- UNIX
- Solaris
- Microsoft Windows
- GNU-Linux
- Mobile Operating System (Android, Symbian)

Share the common terms and their definition with the students:

- Desktop
- Icons
- Panel/Taskbar
- System Tray
- Clock
- Main Menu/ Start Button

Show the students how to run an application in an operating system and define the basic components of interface screen.

Demonstrate the meaning of file drivers and their purpose in an operating system.

Share the steps involved in performing the following function to the students:

- File management
- Creating a new file/folder
- Moving a file/folder
- Copying a file/folder
- Renaming a file/folder
- Deleting a file/folder
- Restoring a file/folder
- View properties of a file
- Caring of computer

Explain what is a malware to the students and define the it types:

- Virus
- Worms
- Trojan horse
- Spyware
- Boot sector virus
- Program file virus
- Spam

Also, share the ways to prevent the computer from a virus and removing a temporary file.

Extension

Ask the students some oral questions based on this chapter.

Q. How does operating system act as a messenger between hardware and application program?

Q. Differentiate between CUI and GUI.

Q. What is Time Sharing OS?

Q. Write any four (4) functions of OS.

Q. List the name of any five (5) operating systems.

Q. List the name of five (5) Linux distributions.

Q. What are icons? List some common icons present on the desktop of Linux and Windows.

Q. What is a file system? List different categories of file system.

Q. Write any four (4) points to be kept in mind while cleaning the computer.

Q. List the ways to prevent virus infection in a computer.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 92 to 98 in the main course book as **AI Quiz**, **Exercise** and **Unsolved Questions**.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 98 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

4. Entrepreneurial Skills-II

Teaching Objectives

Students will learn about

- ☞ Entrepreneurship and Society
- ☞ Qualities of an Entrepreneur
- ☞ Role of an Entrepreneur
- ☞ Myths/Misconceptions about Entrepreneurship
- ☞ Entrepreneurship as a Career Option
- ☞ Work Done by an Entrepreneur
- ☞ Functions of an Entrepreneur
- ☞ Importance of Entrepreneurs

Teaching Plan

Number of Periods
Theory
15

While teaching this chapter, tell the students that entrepreneurship is not only about self-employability but it plays a crucial part in completion of life cycle of society.

Explain the qualities of entrepreneurs and functions of entrepreneurs to the students.

- Hard Working
- Optimistic
- Independent
- Energetic
- Self-Confident
- Perseverant

Define the functions of an entrepreneur in detail with the students:

- Entrepreneurial Functions
- Promotional Functions
- Managerial Functions
- Commercial Functions

Show the role, importance of an entrepreneur to the students and the myth about entrepreneurship.

Define the entrepreneurship as a career option to students in detail.

Ask the student to solve the exercise given on page number 201 as **AI Reboot**.

Ask the students to solve the task given on page number 194 as **AI Task**.

Extension

Ask the students some oral questions based on this chapter.

Q. Explain myth about entrepreneurship.

Q. Define entrepreneurship as career option.

Q. When is entrepreneurship successful?

Q. How does entrepreneurship play an important role in the life cycle of society?

Q. List the qualities of an entrepreneur.

Q. Write the function of entrepreneur.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 110 to 114 in the main course book as **AI Quiz**, **Exercise** and **Unsolved Questions**.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 114 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

5. Green Skills-II

Teaching Objectives

Students will learn about

- ☞ What is Sustainable Development?
- ☞ Importance of Sustainable Development
- ☞ Problems Related to Sustainable Development
- ☞ Challenges to Sustainable Development
- ☞ Sustainable Development Goals— Agenda 2030
- ☞ Sustainable Development Initiatives in India
- ☞ Our Role in Sustainable Development

Teaching Plan

Number of Periods
Theory
5

While teaching this chapter, tell the students that environment can be classified as natural and artificial. Natural environment consists of all the living and non-living things. It encompasses the interaction of all living beings, climate and natural resources.

Define sustainable development to the students and importance of sustainable development.

Explain the problems related to sustainable development to the students.

Explain the following aspects related to sustainable development in detail with suitable examples:

- Importance
- Problems
- Challenges

Explain the meaning of Sustainable Development Goals – Agenda 2030 in detail with proper examples:

- Goal 1
- Goal 2
- Goal 3
- Goal 4
- Goal 5
- Goal 6

- Goal 7
- Goal 8
- Goal 9
- Goal 10
- Goal 11
- Goal 12
- Goal 13
- Goal 14
- Goal 15
- Goal 16
- Goal 17

Tell the students that the Government of India has started many policies at the central level and state level in the direction of achieving SDGs. Some of these are:

- Swachh Bharat Mission
- Beti Bachao Beti Padhao
- Pradhan Mantri Awas Yojana
- Smart Cities
- Pradhan Mantri Jan Dhan Yojana
- Pradhan Mantri Ujjwala Yojana

Explain our role in sustainable development which are:

- Quality Education
- Affordable and Clean Energy
- Reduced Inequalities
- Responsible Consumers and Producers
- Protect Life on Land
- Clean Water and Sanitation
- Decent Work and Economic Growth
- Sustainable Cities and Communities
- Protect Life Below Water

Extension

Ask the students some oral questions based on this chapter.

Q. What is environment?

Q. Differentiate between:

a. Renewable resources

b. Non-Renewable resources

Q. What is sustainable development?

Q. Write the importance of sustainable development.

Q. Write problems related to sustainable development.

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 122 to 126 in the main course book as **AI Quiz**, **Exercise** and **Unsolved Questions**.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 126 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

Class 10

LESSON PLAN

Artificial Intelligence

Part B-Subject Specific Skills

1. Introduction to AI

Teaching Objectives

Students will learn about

- What is Intelligence?
- Decision Making
- How do Machines become Intelligent?
- What is not AI?
- Domains of AI
- Types of Intelligence
- What is Artificial Intelligence?
- Applications of AI Around Us
- AI and Related Terminologies
- AI Ethics

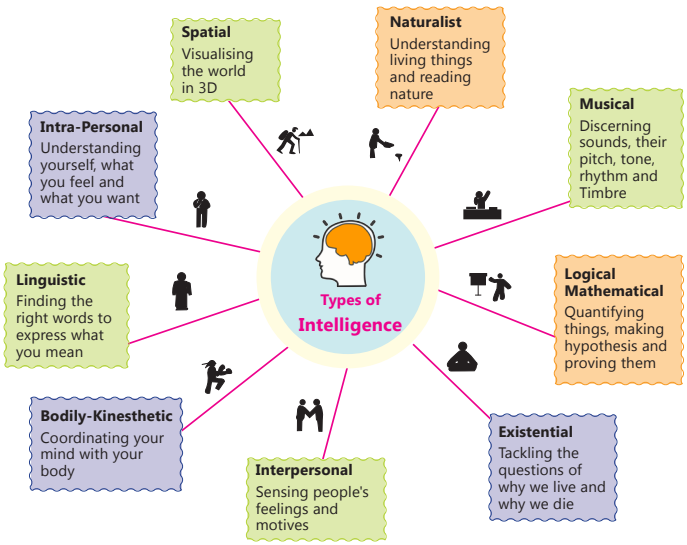
Teaching Plan

Number of Periods	
Theory	Practical
8	10

Before Explain to the students that Intelligence is how good you are in languages or science or music or art. You cannot be naturally skilled at the same things that include your school subjects, music, sports etc.

Define the types of intelligence:

- Intrapersonal Intelligence
- Spatial Intelligence
- Naturalist Intelligence
- Musical Intelligence
- Logical-Mathematical Intelligence
- Existential Intelligence
- Interpersonal Intelligence
- Bodily-kinesthetic Intelligence
- Linguistic Intelligence



Tell the students that decision making is the process of comparing our different alternatives and coming to a conclusion on what exactly you want to do. It is a process of selection which is more satisfactory than other options.

Explain the students that Artificial Intelligence is the science and engineering of making intelligent machines. It is a technique of getting machines to work and behave like humans.

Tell the students that machines become intelligent with the algorithms that are fed into them by developers. They are trained with information that makes them intelligent to achieve the desired output.

Share the applications of AI around us which are:

- Google Search
- Digital Assistants
- Google Maps
- Preferred Recommendations
- Ridesharing Apps
- AI based Games
- Healthcare
- Chatbots

Tell the students about what is not AI and give them proper examples in detail.

Explain the domains of AI which are:

- Data Science
- Computer Vision
- NLP

Define the AI Ethics to the students which are:

- Data Privacy
- Unemployment
- AI Bias
- AI Access
- AI for Kids

Extension

Ask the students some oral questions based on this chapter.

Q. What is intelligence?

Q. Define the following:

a. Intrapersonal Intelligence
b. Spatial Intelligence
c. Naturalist Intelligence
d. Musical Intelligence
e. Logical-Mathematical Intelligence
f. Existential Intelligence
g. Interpersonal Intelligence
h. Bodily-kinesthetic Intelligence
i. Linguistic Intelligence

Q. What is decision making?

Q. What is Artificial Intelligence?

Q. How do machines become intelligent?

Q. Define the following application of AI:

a. Google Search
b. Digital Assistants
c. Google Maps
d. Preferred Recommendations
e. Ridesharing Apps
f. AI based Games
g. Healthcare
h. Chatbots

Q. Define the following:

a. Data Science b. Computer Vision c. NLP

Q. Define the following:

a. Data Privacy b. Unemployment c. AI Bias

d. AI Access e. AI for Kids

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 145 to 149 in the main course book as **AI Quiz**, **Exercise** & **Unsolved Questions**. Tell them to solve the critical and computational skill developing exercises as **AI in Life** and **AI Deep Thinking** given on Page 150. Ask the students to think and answer the exercise as **AI Ready 1** given on page number 151.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 150 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

2. AI Project Cycle

Teaching Objectives

Students will learn about

- ☞ Introducing AI Project Cycle
- ☞ Stages of AI Project Cycle
- ☞ Neutral Network

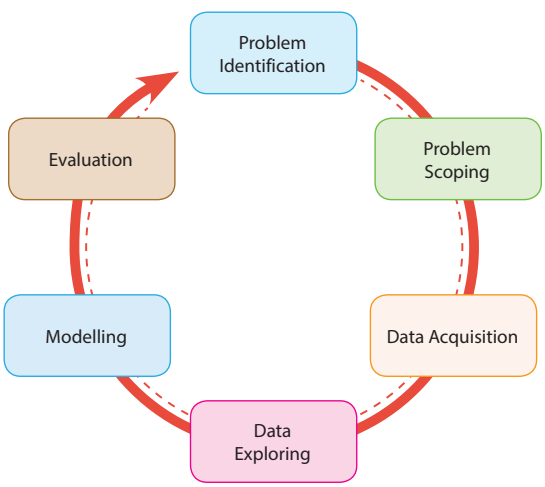
Teaching Plan

Number of Periods	
Theory	Practical
8	10

Before Tell the students that project cycle is the steps taken to complete a task from the beginning to its end. AI project cycle provides us with a framework of planning, organising, executing and implementing an AI project to achieve a target.

Define the stages of AI project cycle. There are mainly five stages of developing an AI Project:

1. Problem Scoping
2. Data Acquisition
3. Data Exploration
4. Modelling
5. Evaluation



Define the different ways to visualise data to the students.

Share the meaning of Neural Networks and why do we use them to the students along with the working of it.

Ask the student to solve the exercise given on page number 166 as **AI Reboot**.

Ask the students to solve the task given on pages number 152 and 153 as **AI Task**.

Extension

Ask the students some oral questions based on this chapter.

Q. What is a project cycle?

Q. Define the following stages of AI project cycle:

1. Problem Scoping
2. Data Acquisition
3. Data Exploration
4. Modelling
5. Evaluation

Q. What is neural network?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 167 to 171 in the main course book as **AI Quiz**, **Exercise** & **Unsolved Questions**. Tell them to solve the critical and computational skill developing exercises as **AI in Life** and **AI Deep Thinking** given on Pages 171 and 172. Ask the students to think and answer the exercise as **AI Ready 2** given on page number 173.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 172 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

3. Advance Python

Teaching Objectives

Students will learn about

- Introduction to Anaconda
- What is a Virtual Environment?
- Introduction to Python
- Applications of Python
- Understanding Jupyter Notebook
- Working with Jupyter Notebook
- Why Python for Artificial Intelligence
- Recap of Python Basics

Teaching Plan

Number of Periods	
Theory	Practical
10	30

Start the chapter by giving an introduction of Anaconda to the students by stating the brief history of it.

Tell the students that Anaconda is CLI and uses Anaconda Prompt for programming.

Show the detailed and labelled steps to the students for installing Anaconda for Windows.

Make sure that students understand Jupyter Notebook and to work on it properly. Also, share the steps to install Jupyter with the students.

Explain the meaning of Virtual environment to the students along with the detailed steps on how to create a virtual environment.

Share the information with the students about working with Jupyter Notebook and how to install the same easily in Windows. Make sure to share the detailed steps with the students for better understanding.

Tell the students about the interface of Jupyter Notebook and explain the role of tools available in this interface:

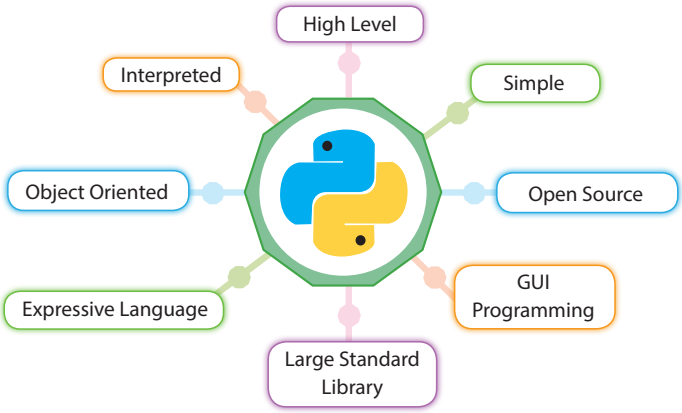
- Save
- Add
- Cut
- Copy
- Paste
- Shift
- Run
- Stop

Define the menus and tabs present in the interface windows which are:

- File Menu
- Edit Menu
- View Menu
- Insert Menu
- Cell Menu
- Kernel Menu
- Widgets Menu
- Help Menu

Introduce Python to the students in brief along with a little history.

Explain to the students that why Python for Artificial Intelligence in detail and share all the points that are required to fulfil the answer of this query.



Share the variety of applications of Python with the students in detail with their purpose.

Do a recap of basics of python for the students taught in Class 9 and explain the following:

- Python Character Set
- Statement in Python (Simple, Multiline, and Multiple)
- Comments (Single line and Multi line)
- Keywords
- Identifiers
- Variables
- Data Types (Numbers, None, Sequence, Boolean, Sets, Maps, and Dictionary)
- Operators (Arithmetic, Comparison or Relational, Logical, Assignment, Augmented Assignment)
- Operator Precedence
- Type Conversion (Implicit and Explicit)

- Print( ) Function
- Input( ) Function
- Conditional Statements
- Looping Statements (for loop and while loop)

Ask the student to solve the exercise given on page number 201 as **AI Reboot**.

Ask the students to solve the task given on page number 194 as **AI Task**.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Anaconda?

Q. What is Jupyter Notebook?

Q. Why Pythion for AI?

Q. Define the following:

a. File Menu b. Edit Menu c. View Menu
d. Insert Menu e. Cell Menu f. Kernel Menu
g. Widgets Menu h. Help Menu

Q. Write short note on:

a. Python Character Set b. Statement in Python c. Comments
d. Keywords e. Identifiers f. Variables
g. Data Types h. Operators i. Operator Precedence
j. Type Conversion k. Print( ) Function l. Input( ) Function
m. Conditional Statements n. Looping Statements

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 202 to 208 in the main course book as **AI Quiz**, **Exercise** & **Unsolved Questions**.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 209 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

4. Data Science

Teaching Objectives

Students will learn about

- What is Data Science?
- Revisiting AI Project Cycle
- Python for Data Science
- Statistical Learning with Python
- Personality Prediction
- Understanding K-Nearest Neighbour Model (K-NN)
- Applications of Data Science
- Data Collection
- Data Access in Python
- Data Visualisation in Python

Teaching Plan

Number of Periods	
Theory	Practical
5	5

Share with the students that Data Science is the process of using the skills of programming, mathematics and statistics together to find meaningful information from the given data. It is a technology that does the analysis of data to create impactful solutions from the given data or to predict outcomes for a problem statement.

Define the applications of Data Science to the students which are:

- Internet Search
- Digital Advertisement
- Website Recommendations
- Image Recognition
- Speech Recognition
- Airline Route Planning
- Fraud and Risk Detection
- Medicine
- Gaming
- Virtual Reality

Tell the students about revisiting AI project cycle and tell them about all the stages:

The following is the 4Ws canvas for the above problem.

Define the following to the students with suitable examples and detail:

- Data Collection
- Python for Data Science
- Data Access in Python
- Pandas
- Statistical Learning with Python
- Data Visualisation in Python
- Personality Prediction
- Understanding K-Nearest Neighbour Model (K-NN)

Ask the student to solve the exercise given on page number 237 as **AI Reboot**.

Ask the students to solve the task given on pages number 222 and 234 as **AI Task**.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Data Science?

Q. Define the following application:

- Internet Search
- Digital Advertisement
- Website Recommendations
- Image Recognition
- Speech Recognition
- Airline Route Planning
- Fraud and Risk Detection
- Medicine
- Gaming
- Virtual Reality

Q. Explain the following:

- Data Collection
- Python for Data Science
- Data Access in Python
- Pandas
- Statistical Learning with Python
- Data Visualisation in Python
- Personality Prediction
- Understanding K-Nearest Neighbour Model (K-NN)

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 238 to 242 in the main course book as **AI Quiz**, **Exercise** & **Unsolved Questions**. Tell them to solve the critical and computational skill developing exercises as **AI in Life** and **AI Deep Thinking** given on Page 243. Ask the students to think and answer the exercise as **AI Ready 1** given on page number 244.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 243 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

5. Computer Vision

Teaching Objectives

Students will learn about

- Computer Vision-Definition
- Difference Between Computer Vision and Human Vision
- Tasks in Computer Vision Applications
- Basics of Images
- Image Features
- Image Processing Operations
- What is Neural Network?
- Applications of Computer Vision
- What are Pixels?
- How do Computers see Images?
- Introducing OpenCV
- Understanding Convolution Operator
- What is Convolutional Neural Network (CNN)?

Teaching Plan

Number of Periods	
Theory	Practical
10	20

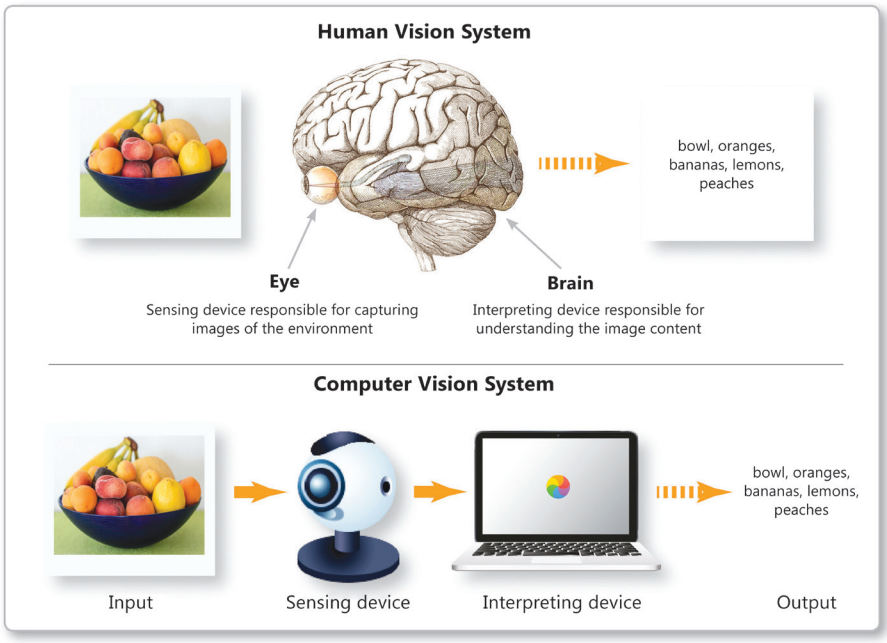
Before starting the chapter, tell the students that Computer Vision means giving the ability to the computer to see the world just like humans.

Explain that It is a domain of Artificial Intelligence that enables computers to see, observe and understand digital images or data, process them by acquiring, screening, analysing, identifying and extracting information using the machine learning and neural network algorithms.

Define the following applications of Computer Vision to the students:

- Image Classification and Object Detection
- Agriculture
- Warehouse Automation
- Autonomous Cars
- Damage Analysis
- Banking
- Retail Business
- Medical Field

Explain the difference between Computer Vision and Human Vision in detail with suitable examples to the students.



Define the tasks in CV Applications to the students in details with proper examples.

Define the following with examples:

- Pixels
- How does computer see Images?
- Introducing OpenCV
- Understanding Convolution Operator
- Basics of Images
- Image Features
- Image Processing Operation

Tell the students what is Neural Network and Convolutional Neural Network (CNN) in detail.

Ask the students to solve the task given on pages number 253, 254 and 263 as **AI Task**.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Computer Vision?

Q. Define the following applications of CV:

- Image Classification and Object Detection
- Banking
- Autonomous Cars
- Warehouse Automation
- Medical Field
- Agriculture
- Retail Business
- Damage Analysis

Q. Explain the following:

- Pixels
- Image Features
- Image Processing Operation
- Basics of Images
- Introducing OpenCV
- Understanding Convolution Operator

Q. How does computer see Images?

Q. What is CNN?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 267 to 273 in the main course book as **AI Quiz**, **Exercise** & **Unsolved Questions**. Tell them to solve the critical and computational skill developing exercises as **AI in Life** and **AI Deep Thinking** given on Page 273. Ask the students to think and answer the exercise as **AI Ready 4** given on page number 275.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 274 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

6. Natural Language Processing

Teaching Objectives

Students will learn about

- What is NLP?
- Applications of Natural Language Processing
- Revisiting AI Project Cycle
- Different Types of Chatbots
- Data Processing
- Process involved in NLP
- What are Chatbots?
- Human Language Vs Computer Language
- Techniques of Natural Language Processing

Teaching Plan

Number of Periods	
Theory	Practical
3	8

Before starting the chapter, communication through text or speech is a very common method of interaction in humans. Now computers are enabled using a new technology called Natural Language Processing to understand, learn, process and manipulate human languages.

Tell the students that Natural Language Processing or NLP is the subset of Artificial Intelligence that deals with how computers through a program will perform tasks like speech recognition, translation, large amounts of Natural language data analysis and extraction.

Define the process involved in NLP to the students:

- Lexical Analysis
- Semantic Analysis
- Pragmatic Analysis
- Syntactic Analysis
- Discourse Integration

Define the applications of NLP to the students with proper examples:

- Automatic Text Summarization
- Text Classification
- Chatbots
- Sentiment and Emotion Analysis
- Virtual Assistants

Tell the students about chatbots and define the types of chatbots which are Script-bot and Smart-bot.

Define the difference between human language Vs computer language along with the details.

Define the following to the students:

- Data Processing
- Techniques of NLP
- Term Frequency and Inverse document Frequency
- NLTK

Extension

Ask the students some oral questions based on this chapter.

Q. What is NLP?

Q. Define the following:

- Lexical Analysis
- Syntactic Analysis
- Semantic Analysis
- Discourse Integration
- Pragmatic Analysis

Q. Define the following applications of NLP:

- Automatic Text Summarization
- Sentiment and Emotion Analysis
- Text Classification
- Virtual Assistants
- Chatbots

Q. What are chatbots?

Q. What are Script-bot?

Q. What are Smart-bot?

Q. Define the following:

- Data Processing
- Techniques of NLP
- Term Frequency and Inverse document Frequency
- NLTK

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 296 to 302 in the main course book as **AI Quiz**, **Exercise** & **Unsolved Questions**. Tell them to solve the critical and computational skill developing exercises as **AI in Life** and **AI Deep Thinking** given on Page 302. Ask the students to think and answer the exercise as AI Ready 5 given on page number 303.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 302 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.

7. Evaluation

Teaching Objectives

Students will learn about

- ☞ Understanding Evaluation
- ☞ Reasons for Inefficiency of AI Model
- ☞ Confusion Matrix
- ☞ Evaluation Matrix for AI Model
- ☞ Importance of Evaluation
- ☞ Terminologies of Model Evaluation
- ☞ Terminologies of Confusion Matrix

Teaching Plan

Number of Periods	
Theory	Practical
2	5

Tell the students about evaluation and make them understand how it works.

Share the importance of evaluation with the students along with examples.

Tell the students the reasons for inefficiency of AI Model:

- Lack of Training Data
- Inefficient coding / Wrong Algorithms
- Not Easy
- Unauthenticated Data / Wrong Data
- Not Tested
- Less Accuracy

Define the terminologies of model evaluation to the students with proper examples and case studies.

Tell the students about the Confusion Matrix along with the terminologies, evaluation and case studies.

Ask the students to solve the task given on pages number 309 and 310 as **AI Task**.

Extension

Ask the students some oral questions based on this chapter.

Q. What is evaluation?

Q. Explain the importance of evaluation.

Q. Define the following:

- Lack of Training Data
- Inefficient coding / Wrong Algorithms
- Not Tested
- Less Accuracy
- Unauthenticated Data / Wrong Data
- Not Easy

Q. What is confusion matrix?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 313 to 319 in the main course book as **AI Quiz**, **Exercise** & **Unsolved Questions**.

Take the students to the computer lab and let them practice the activity given in **AI Lab** section on Page 320 in the main course book. This will enhance the ability of the students and serve as a Subject Enrichment activity.