8

Computer Genius!

Teacher's Manual

Extended Support for Teachers

ORANGE
www.orangeeducation.in
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Teacher's Time Table

Periods / Days	0	I	II	III	IV	BREAK	V	VI	VII	VIII
Monday										
Tuesday										
Wednesday										
Thursday										
Friday										
Saturday										

Development Milestones in a Child

Development milestones are a set of functional skills or age-specific tasks that most children can do at a certain age. These milestones help the teacher identify and understand how children differ in different age groups.

Age 5 - 8 Years	
Physical	• First permanent tooth erupts • Shows mature throwing and catching patterns • Writing is now smaller and more readable • Drawings are now more detailed, organised and have a sense of depth
Cognitive	• Attention continues to improve, becomes more selective and adaptable • Recall, scripted memory, and auto-biographical memory improves • Counts on and counts down, engaging in simple addition and subtraction • Thoughts are now more logical
Language	• Vocabulary reaches about 10,000 words • Vocabulary increases rapidly throughout middle childhood
Emotional/Social	• Ability to predict and interpret emotional reactions of others enhances • Relies more on language to express empathy • Self-conscious emotions of pride and guilt are governed by personal responsibility • Attends to facial and situational cues in interpreting another's feelings • Peer interaction is now more prosocial, and physical aggression declines

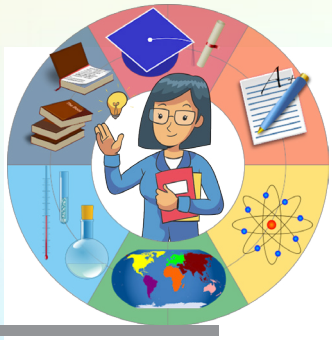
"If you cannot do great things, do small things in a great way."

Age 9 - 11 Years	
Physical	• Motor skills develop resulting in enhanced reflexes
Cognitive	• Applies several memory strategies at once • Cognitive self-regulation is now improved
Language	• Ability to use complex grammatical constructions enhances • Conversational strategies are now more refined
Emotional/Social	• Self-esteem tends to rise • Peer groups emerge

Age 11 - 20 Years	
Physical	• If a girl, reaches peak of growth spurt • If a girl, motor performance gradually increases and then levels off • If a boy, reaches peak and then completes growth spurt • If a boy, motor performance increases dramatically
Cognitive	• Is now more self-conscious and self-focused • Becomes a better everyday planner and decision maker
Emotional/Social	• May show increased gender stereotyping of attitudes and behaviour • May have a conventional moral orientation

Managing the children's learning needs according to their developmental milestones is the key to a successful teaching-learning transaction in the classroom.

"Family is the most important thing in the world."



Teaching Pedagogies

Pedagogy is often described as the approach to teaching. It is the study of teaching methods including the aims of education and the ways in which such goals can be achieved.

Lesson Plans

A lesson plan is the instructor's road map which specifies what students need to learn and how it can be done effectively during the class time. A lesson plan helps teachers in the classroom by providing a detailed outline to follow in each class.

A lesson plan addresses and integrates three key components:

- Learning objectives
- Learning activities
- Assessment to check the student's understanding

A lesson plan provides an outline of the teaching goals:

Before the class:

1. Identify the learning objectives.
2. Plan the lesson in an engaging and meaningful manner.
3. Plan to assess student's understanding.
4. Plan for a lesson closure.

↓

During the class:

Present the lesson plan.

↓

After the class:

Reflect on what worked well and why. If needed, revise the lesson plan.

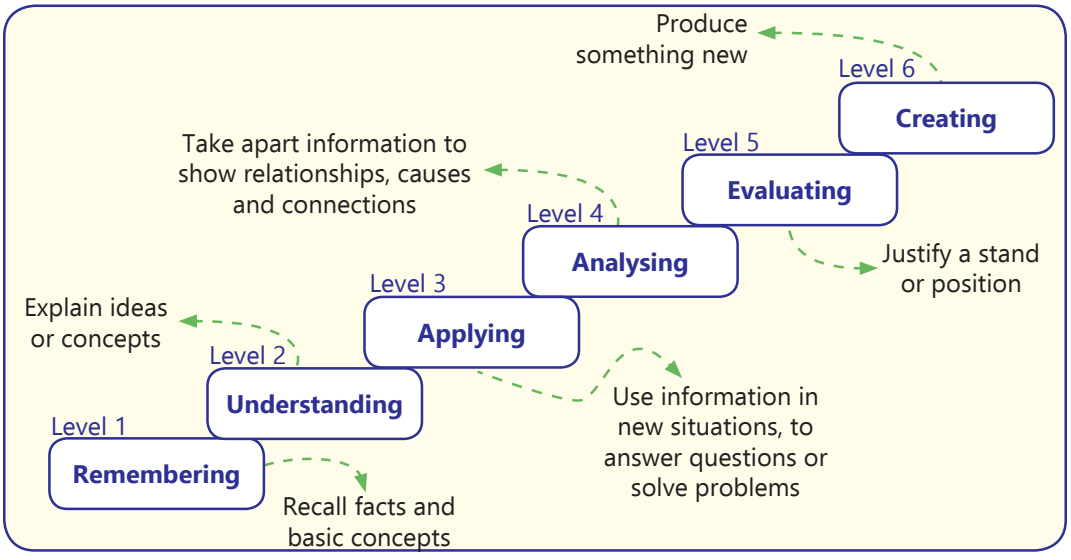
"Knowing yourself is the beginning of all wisdom."

Teaching Strategies

Numerous strategies have evolved over the years to facilitate the teaching-learning process in the classrooms.

Bloom's Taxonomy

Bloom's Taxonomy was created by **Dr Benjamin Bloom** and several of his colleagues, to promote higher forms of thinking in education instead of rote learning. There are three domains of learning: cognitive (mental), affective (emotional), and psychomotor (physical). However, when we refer to Bloom's Taxonomy we speak of the cognitive domain. Bloom's Taxonomy is a list of cognitive skills that is used by teachers to determine the level of thinking their students have achieved. As a teacher, one should attempt to move students up the taxonomy as they progress in their knowledge.



Teachers should focus on helping students remember information before expecting them to understand it, helping them understand it before expecting them to apply it to a new situation, and so on.

"If you have no confidence in self, you are twice defeated in the race of life."

Class 8

Lesson Plan

Computer Genius

1. Google Apps

Teaching Objectives

Students will learn about

- ☞ Google
- ☞ Apps of Google

Number of Periods	
Theory	Practical
1	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 7 of the main course book.

While teaching this chapter, brief the students about Google and mobile apps.

Introduce Google to the students along with the history.

Explain the Google Apps to the students in detail like Gmail, Google Drive, Google Maps, Google Docs, Google Sheets, Google Slides and YouTube.

Explain the following components of Google Drive to the students along with the steps involved in:

- What can you store in Google Drive?
- How much can you store in Google Drive?
- How does it work?
- Features of Google Drive

Demonstrate the features of Google Maps to the students along with the steps involved in it.

Demonstrate the opening/ importing an existing word document for editing in Google Docs to the students along with the steps involved in it.

Explain the following components of Google Sheets to the students along with the steps involved in:

- Features of Google Sheets
- Creating and Saving a New Google Sheet
- Sharing and Protecting Data in Google Sheets
- Sharing a File
- Protecting Data

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Explain the following components of Google Slides to the students along with the steps involved in:

- Features of Google Slides
- Creating a New Presentation

Explain the following components of YouTube to the students along with the steps involved in:

- Features of YouTube
- How to Create YouTube Account
- Uploading a Video on YouTube

Ask the student to solve the exercise Quest given on page number 18.

Extension

Ask the students some oral questions based on this chapter.

Q. What are Google Apps?

Q. What is Gmail?

Q. What is Google Drive?

Q. What is Google Maps?

Q. What is Google Docs?

Q. What is Google Sheets?

Q. What is Google Slides?

Q. What is YouTube?

Evaluation

After explaining the chapter, let the students do the exercises given on Pages 21 and 22 in the main course book as Exercise. Tell the students to solve Fun Zone given on page 22 of the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 23 of the main course book. Help the students to solve these questions

In creative assignment, activity like Lab Activity and Go Online on page 23 of the main course book will enhance the ability of the students and serve as creativity and interdisciplinary learning activities.

Suggested Activity

Ask the students to create a document in Google Docs and a presentation in Google Slides on 'Environment Day'.

2. Trending Technologies

Teaching Objectives

Students will learn about

- ☞ Artificial Intelligence
- ☞ Robotics

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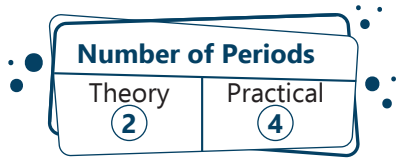
- ☞ Machine Learning
- ☞ Internet of Things (IoT)
- ☞ Augmented Reality and Virtual Reality
- ☞ Data Science
- ☞ Edge Computing
- ☞ 3D Printing



Teaching Plan

Before starting the chapter, ask the students to solve the question in 'Let's Recap' given on page 24 of the main course book.

Begin with introduction of trending technologies as newer technologies evolving every day across the globe.

Let them know about the artificial intelligence and explain to them that AI is a part of almost everything we use today such as smartphones, cars and banks.

Make the students aware of Robotics.

Make the students understand the robotic process automation.

Explain some robots to the students.

Let them know about machine learning.

Explain to the students that data science is a field of study that combines domain expertise, programming skills and knowledge of mathematics and statistics to extract meaningful insights from data.

Make the students aware of Internet of Things (IoT).

Let them know that Edge computing is a subsection of cloud computing.

Explain the terms Augmented Reality and Virtual Reality to the students.

Also make the students aware of the process of 3D Printing.

Ask the students to solve the exercise Quest given on page 27 and 29.

Extension

Ask the students some oral questions based on this chapter.

Q. What is AI?

Q. Name some devices where AI is used.

Q. Define Robotics.

Q. What is Machine Learning?

Q. Define Data Science.

Q. Define Internet of Things (IoT).

Q. What is Edge computing?

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Q. Differentiate between Augmented Reality and Virtual Reality.

Q. What is 3D printing?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 31 and 32 in the main course book as Exercise. Tell the students to solve Fun Zone activity given on page 33 of the main course book. Ask the students to answer the questions given as Competency-based/Application-based questions on page 33 of the main course book. Help the students to solve these questions

In creative assignment, activity like Lab Activity on page 34 of the main course book will enhance the ability of the students and serve as flexibility and interdisciplinary learning activities.

Suggested Activity

Ask the students to find some more popular robots and their details other than the ones in the book.

3. AI and Real World

Teaching Objectives

Students will learn about

- ☞ Smile Detection
- ☞ Smile Detection in AI Connect

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on page 37 of the main course book.

While teaching this chapter, tell the students that Artificial Intelligence is a very important part of our lives. It is used in our day to day lives in many ways. To introduce students to the concept of AI in recognizing smiles.

Explain the significance of smile detection in the media industry for understanding public reactions.

Guide students in creating a smile detection program using AI Connect. Make the students understand the basic concepts of coding and AI in recognizing facial expressions, specifically smiles. Explain the purpose of the lesson: creating a program to recognize smiles in images using AI Connect.

Discuss that AI learns from pictures to spot smiles, just like how we learn to recognize faces.

Explain in simple terms how AI software learns to see smiles in pictures using examples like when your phone detects a smile in a selfie.

Smile Detection Program using AI Connect:

Step 1: Load Image Block

Open AI Connect and create a new project for AI Coding activity.

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Drag and drop the "Load Image" block from the "Facial Features" sub-category in the "AI Learning" category.

Step 2: If-Else Logic Block

From the "Logic" category, select the "if do" block and extend it with the "else" command.

Step 3: Adding Comparison Block

Within the "if do" block, add the "==" block.

On the right side of the "==" block, place the numeric block (0 block).

On the left side of the "==" block, use the "Get face count" block from "Facial Features" and change it to "Get smile count".

Step 4: Providing Output Statement

Create an output statement based on smile count detection:

If the smile count is equal to 1, print "Smiling".

Otherwise, print "Not Smiling".

Step 5: Display Image Block

Finally, add the "Show Image without border" block to display the image. Explain each step carefully and demonstrate on the AI Connect platform.

Ask the students to solve the exercise Quest given on page 42.

Extension

Ask the students some oral questions based on this chapter.

Q. What technology detects smiles?

Q: What expression is the program looking for?

Q: What type of learning does smile detection use?

Q: Where is smile detection important?

Q: Which company has Smile Shot Mode?

Q: Which category is used for conditional commands?

Q: What do you do to choose an image?

Q: What do you press after selecting an image?

Q: What do you do to start the program in AI Connect?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 42 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 43 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 43 of the main course book. Help the students to solve these questions.

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In creative assignment, activity like Lab Activity given on page 43 of the main course book will enhance the ability of the students and serve as critical thinking and technology literacy activity.

Suggested Activity

Ask the students to experiment further by modifying their programs to recognize different facial expressions apart from smiles.

4. Machine Learning

Teaching Objectives

Students will learn about

- ☞ Applications of Machine Learning
- ☞ Up and Down Arrow Detection

Number of Periods	
Theory	Practical
1	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 44 of the main course book.

While teaching this chapter, brief the students about artificial intelligence.

Introduce machine learning to the students.

Explain the following advantages of machine learning to the students:

- Continuous improvement
- Automation for everything
- Trends and patterns identification
- Wide range of application

Explain the following disadvantages of machine learning to the students:

- Data acquisition
- Highly error-prone
- Algorithm selection
- Time consuming

Demonstrate the applications of machine learning to the students:

- Social media features
- Voice recognition
- Image recognition

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- Banking domain
- Language translation

Demonstrate the steps to detect up and down arrow marks using machine learning to the students.

Demonstrate the concept of confidence level in machine learning.

Ask the student to solve the exercise Quest given on page number 54.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Machine Learning?

Q. List the advantages of Machine Learning.

Q. List the disadvantages of Machine Learning.

Q. Explain the applications of Machine Learning.

Q. How up and down arrows are detect using Machine learning?

Q. What is Load Image block?

Q. What is Confidence Level?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 54 and 55 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 55 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 55 of the main course book. Help the students to solve these questions.

In creative assignment, activity like Lab Activity given on page 55 of the main course book will enhance the ability of the students and serve as initiative and productivity & accountability activity.

Suggested Activity

Ask the students to create a presentation in Google Slides on 'Applications of Machine Learning'.

5. AI Domains

Teaching Objectives

Students will learn about

- ☞ Intelligence
- ☞ Artificial Intelligence
- ☞ Classification of AI
- ☞ AI Domains
- ☞ Data

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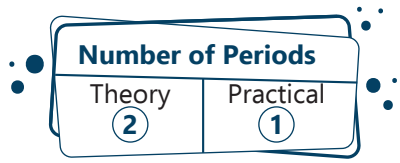
☞ Natural Language Processing

☞ Computer Vision



Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 56 of the main course book.

While teaching this chapter, brief the students about intelligence along with features of human intelligence.

Discuss the concept of artificial intelligence.

Explain the types of Artificial Intelligence to the students:

- Weak AI
- Strong AI

Explain the broad categories of AI domains to the students:

- Data
- Natural Language Processing (NLP)
- Computer Vision

Demonstrate the concept of Data and its analysis along with Rock-Paper-Scissor game to the students.

Demonstrate the steps to detect up and down arrow marks using machine learning to the students.

Explain the concept of Natural Language Processing (NLP) to the students.

Demonstrate the concept of computer vision along with Emoji-Scavenger-Hunt game to the students.

Ask the student to solve the exercise Quest given on page number 62.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Intelligence?

Q. List the features of Human Intelligence.

Q. What is Artificial Intelligence?

Q. Differentiate between Weak AI and Strong AI.

Q. What is Data?

Q. What is Data Analysis?

Q. How Artificial Intelligence is used in Rock-Paper-Scissors game?

Q. What is Natural Language Processing?

Q. What is Computer Vision?

Q. What is the core functionality of Emoji-Scavenger-Hunt game?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 62 and 64 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 64 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 65 of the main course book. Help the students to solve these questions.

In creative assignment, activity like Lab Activity given on pages 65 and 66 of the main course book will enhance the ability of the students and serve as critical and technology literacy activities.

Suggested Activity

Ask the students to find some more popular games where the computer vision is used other than the ones in the book.

6. Future of Artificial Intelligence

Teaching Objectives

Students will learn about

- ☞ Smart City
- ☞ Smart School
- ☞ Smart Home

Number of Periods	
Theory	Practical
2	0

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 70 of the main course book.

While teaching this chapter, brief the students about areas where the artificial intelligence is used.

Discuss the concept of smart city.

Explain the components of smart cities to the students:

- Smart Traffic Management
- Smart Parking
- Smart Waste Management
- Smart Lighting
- Smart Government

Demonstrate the concept of smart schools to the students along with its features.

Explain the components of smart schools to the students:

- Smart Content
- Intelligent Tutoring Systems
- Paving New Learning Pathway

Explain the concept of smart home to the students.

Ask the student to solve the exercise Quest given on page number 75.

Extension

Ask the students some oral questions based on this chapter.

Q. What is Smart City?

Q. What is Smart Traffic Management?

Q. What is Smart Parking?

Q. What is Smart Waste Management?

Q. What is Smart Lighting?

Q. What is Smart School?

Q. List down the features of Smart School.

Q. What is Smart Content?

Q. What is Intelligent Tutoring Systems?

Q. What is Smart Home?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 76 and 77 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 78 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 78 of the main course book. Help the students to solve these questions.

In creative assignment, activity like Lab Activity given on page 78 of the main course book will enhance the ability of the students and serve as creativity and initiative activities.

Suggested Activity

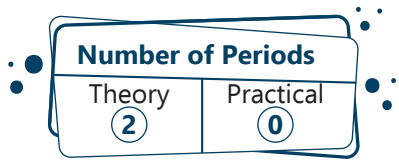
Ask the students to explore more smart technologies in our community based on Artificial Intelligence other than the ones in the book.

7. Sustainable Development Goals

Teaching Objectives

Students will learn about

- ☞ Sustainable Development Goals
- ☞ Sustainable Development Goals in Context of AI



Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 79 of the main course book.

While teaching this chapter, brief the students about sustainable development.

Discuss the concept of sustainable development goals.

Explain the 17 sustainable development goals to the students:

- SDG 1: No Poverty
- SDG 2: Zero Hunger
- SDG 3: Good Health and Well-being
- SDG 4: Quality Education
- SDG 5: Gender Equality
- SDG 6: Clean Water and Sanitation
- SDG 7: Affordable and Clean Energy
- SDG 8: Decent Work and Economic Growth
- SDG 9: Industry, Innovation, and Infrastructure
- SDG 10: Reduced Inequality
- SDG 11: Sustainable Cities and Communities
- SDG 12: Responsible Consumption and Production
- SDG 13: Climate Action
- SDG 14: Life Below Water
- SDG 15: Life on Land
- SDG 16: Peace, Justice, and Strong Institutions
- SDG 17: Partnerships for the Goals

Demonstrate the concept of sustainable development goals in context of AI.

Ask the student to solve the exercise Quest given on page number 83.

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Extension

Ask the students some oral questions based on this chapter.

Q. What is Sustainable Development?

Q. What is Sustainable Development Goal?

Q. List the 17 sustainable development goals.

Q. How AI helps in achieving Sustainable Development Goals?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 84 and 85 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 85 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 86 of the main course book. Help the students to solve these questions.

In creative assignment, activity like Lab Activity given on page 86 of the main course book will enhance the ability of the students and serve as art integration learning and social interaction activities.

Suggested Activity

Ask the students to explore more smart technologies in our community based on Artificial Intelligence other than the ones in the book.

8. Careers in AI

Teaching Objectives

Students will learn about

- ☞ Phase-Wise Development in AI
- ☞ Types of AI Careers
- ☞ Skill Set Required for Some AI Related Careers

Number of Periods	
Theory	Practical
2	0

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 87 of the main course book.

While teaching this chapter, brief the students about careers in AI.

Explain the phase-wise development in AI to the students:

- First Phase

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- Second Phase
- Third Phase
- Further Phase

Demonstrate the two broad categories of AI career to the students.

- Core Research Development and Deployment
- Field and Area Specialists

Demonstrate the various jobs in core research development and deployment in AI to the students, including:

- Machine Learning Engineers
- Data Scientists
- Business Intelligence Developers
- AI Research Scientists
- Software Analysts
- Software Developers
- Computer Scientists
- Computer Engineers
- Algorithm Specialists

Demonstrate the various jobs in field and area specialists in AI to the students, including:

- Engineers (mechanical electrical construction, etc.)
- Medical Professionals
- Defence Force Specialists
- Graphic Designers
- Architects
- Musicians
- Entertainment Specialists

Discuss the skill set required to build career in AI in detail with the students:

- Machine Learning Engineer
- Data Scientist
- Business Intelligence Developer
- AI Research Scientist

Ask the student to solve the exercise Quest given on page number 91.

Extension

Ask the students some oral questions based on this chapter.

Q. Discuss the phase-wise development in AI?

Q. What is the major enhancement in second phase of development in AI?

Q. Who is a Data Scientist?

Q. Who is a Machine Learning Engineer?

Q. Who is a Business Intelligence Developer?

Q. What skills are required for a Machine Learning Engineer?

Q. What skills are required for a Data Scientists?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 92 and 93 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 93 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 93 of the main course book. Help the students to solve these questions.

In creative assignment, activity like Lab Activity given on page 94 of the main course book will enhance the ability of the students and serve as creativity activity.

Suggested Activity

Ask the students to prepare a presentation on 'Phase-wise Development of AI'.

9. Access to AI and Ethical Issues

Teaching Objectives

Students will learn about

- ☞ AI Ethics
- ☞ Bias in Real-World Data
- ☞ The Problem of Inclusion
- ☞ The Problem of Facts and Their Interpretation
- ☞ Components of a Good AI System
- ☞ Ethical Concerns Related to the Adoption of the AI Systems
- ☞ Cost Benefit Analysis of the AI Systems

Number of Periods	
Theory	Practical
2	0

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 96 of the main course book.

While teaching this chapter, brief the students about AI ethics.

Explain the ethical issues related to data management to the students:

- Contact lists
- Location
- Chat
- E-mail
- Photos

Demonstrate the bias in real-world data to the students.

Demonstrate the Problem of Inclusion of AI system to the students.

Demonstrate the problem of facts and their interpretation in AI system to the students.

Discuss the components of a good AI system with the students:

- Learning
- Reasoning
- Problem-solving
- Perception
- Language understanding

Discuss the ethical concerns related to the adoption of the AI systems with the students.

Discuss the concerns regarding Job loss due to AI adoption with the students.

Explain the increasing inequalities among population to the students.

Explain the negative adoption of AI systems to the students.

Demonstrate the Black Box problem to the students.

Demonstrate the cost benefit analysis of the AI systems to the students

Ask the student to solve the exercise Quest given on page number 103.

Extension

Ask the students some oral questions based on this chapter.

Q. Discuss the ethical issues related to data management in AI?

Q. How biased data impact the AI system?

Q. List the components of a good AI system.

Q. What are the ethical concerns related to the adoption of the AI systems?

Q. Define Black Box problem.

Q. What are the cost-based benefits of the AI Systems?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 104 and 105 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun

Zone given on pages 106 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 106 of the main course book. Help the students to solve these questions.

In creative assignment, activity like Lab Activity given on page 107 of the main course book will enhance the ability of the students and serve as leadership & responsibility and initiative activity.

Suggested Activity

Ask the students to explore and gather information on the ethical issues related to the AI system adoption and make a poster by using gathered information.

10. Basics of Python

Teaching Objectives

Students will learn about

- Features of Python
- Applications of Python
- Installing Python
- Programming in Python
- Types of Errors
- Data Types
- Variables
- Python Keywords
- Comments in Python
- Python Operators
- Input Statement in Python
- Output Statement in Python

Number of Periods	
Theory	Practical
3	3

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 108 of the main course book.

While teaching this chapter, brief the students about programming language.

Explain the features of Python to the students:

Discuss the applications of python with the students.

Demonstrate the procedure to install Python to the students.

Demonstrate the basic programming modes in Python to the students:

- Interactive Mode
- Script Mode

Explain the components of Python IDLE window to the students.

Demonstrate the procedure to create and saving a program in Python to the students.

Demonstrate the procedure to run a program in Python to the students.

Discuss the types of errors in Python to the students:

- Keyboard Error
- Indentation Error
- Import Error
- Syntax Error
- Name Error

Discuss the different types of datatypes in Python with the students.

Discuss the concept of variable with the students.

Explain the various keywords in Python to the students.

Demonstrate how to implement comment in Python to the students.

Explain the different operators in Python to the students.

- Arithmetic Operators
- Assignment Operators
- Comparison Operators

Demonstrate the use of input statement in Python to the students.

Demonstrate the use of output statement in Python to the students.

Ask the student to solve the exercise Quest given on page number 121.

Extension

Ask the students some oral questions based on this chapter.

Q. List the features of Python programming.

Q. List the applications of Python programming.

Q. How the Python software installs in your computer?

Q. How to start Python and work in interactive mode?

Q. How to create, save and run program in Pythons?

Q. What are the different types of errors in Python?

Q. What are Data Types?

Q. What are Variables?

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Q. Define python keywords.

Q. How can you implement comment in Python?

Q. What are Operators and their types?

Q. How input statements are used in Pythons?

Q. How output statements are used in Pythons?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 122 and 123 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 123 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 124 of the main course book. Help the students to solve these questions.

In creative assignment, activity like Lab Activity given on page 124 of the main course book will enhance the ability of the students and serve as critical thinking and interdisciplinary learning activities.

Suggested Activity

Ask the students to create a program in Python take two input from users as integers and perform different arithmetic operations.

11. Control Flow Statements

Teaching Objectives

Students will learn about

- ☞ Sequential statements
- ☞ Conditional Statements
- ☞ Iterative Statements

Number of Periods	
Theory	Practical
2	2

Teaching Plan

Before starting the chapter, ask the students to solve the question in Let's Recap given on Page 125 of the main course book.

While teaching this chapter, brief the students about control flow statement in programming.

Explain the features of Python to the students:

Discuss the concept of sequential statements with the students.

Demonstrate the concept of conditional statements in Python to the students:

- if Statement
- if-else Statement
- if-elif-else Statement

Explain the if statement with example to the students.

Demonstrate the concept of if-else statement with example to the students.

Explain the if-elif-else statement with example to the students.

Demonstrate the concept of iterative statements in Python to the students:

- for Loop
- while Loop

Explain the 'for' loop with example to the students.

Demonstrate the concept of 'while' loop with example to the students.

Ask the student to solve the exercise Quest given on page number 131.

Extension

Ask the students some oral questions based on this chapter.

Q. What are sequential statements?

Q. What is conditional statement?

Q. What is if statement?

Q. What is if-else statement?

Q. What is if-elif-else statement?

Q. What is iterative statement?

Q. What is for loop?

Q. What is while loop?

Evaluation

After explaining the chapter, let the students do the exercises given on pages 132 and 133 in the main course book as Exercise. After solving the course book exercises, tell the students to solve Fun Zone given on pages 133 of the main course. Ask the students to answer the questions given as Competency-based/Application-based questions on page 134 of the main course book. Help the students to solve these questions.

In creative assignment, activity like Lab Activity given on page 134 of the main course book will enhance the ability of the students and serve as interdisciplinary learning and critical thinking activities.

Suggested Activity

Ask the students to create a program in Python take an input (number) from user as integers and find the factorial of the number.