HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF COMPUTER SCIENCE

CLASS IV [COMPUTER + A.I.]

Session – 2025-26

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
APRIL	Evolution of Computing Devices	Learn about the evolution of computers, and Calculating Devices	Constructive Approach	White Board board, Computer Lab, Book https://www.youtube.com/watch?v=tw_bsmVYIyM	1 Classroom discussion 2 Practical Based Learning	Draw an Abacus and label its parts.	Presentation of Calculating Devices.
JULY	About Files and Folders	Learning about the use of files and folders and remove folders	Inquiry based approach	White Board board, Computer, learning Videos, Book	1 Classroom discussion	Create the tree structure of files and folders	Create a file and folders how to open file and folders
AUGUST	Diving Into Paint 3D	Learning about creating drawings using 3 D options.	Inquiry based approach	White Board board, Computer, learning Videos, Book	1 Classroom discussion 2 Practical Based Learning	Draw the following image in Paint 3 D.	Create a drawing Paint 3D.
	FIRST PERIODIC ASSESSMENT						
SEPTEMBER	Learning MS Word 2016	Learn about apply bullets and numbering, insert symbols in a Word document.	Inquiry based approach	White Board board, Computer, learning Videos, Book	1 Classroom discussion 2 Real life situations	Write a short Paragraph on 'Road safety Rules Check spellings and grammar.	Create a type one paragraph how to use bullets and numbering.
	MID TERM ASSESSMENT						
OCTOBER	Learning Tables Objects	Learning about use different objects such as. word Art, picture and shapes	Constructive Approach	White Board board, Computer, Book	1 Classroom discussion 2 Real life situations	Design a Time Table of your class using Table option.	Complete the tables in MS Word 2016.

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NOVEMBER	More About Scratch	Learning about how to create scratch programs.	Constructive Approach	Green board, Computer Book	1 Classroom discussion, Computer Practical	Create a project in scratch to show the movement of a dog. Use the arrow Keys to move the dog forward or backward.	Create scratch program (min. 5)
DECEMBER	**SECOND PERIODIC ASSESSMENT**						
	Learning MS Power point 2016	Learning about the basic of MS power Point.	Constructive Approach	White Board board, Computer, learning Video, Book	2 Real life situations 2 Practical Based Learning	Create a slide on the topic Water Bodies in MS PowerPoint save the Presentation in your computer.	Create a power point presentation on your Toye's.
JANURARY 26	Learning Slides	Learning about the new features of MS power Point.	Constructive Approach	White Board board, Computer, learning Video, Book	2 Real life situations. 2 Practical Based Learning	Create a PPT in PowerPoint Format the presentation and add pictures.	Apply animation on your slides. complete the presentation by adding more slide background and formatting.
	Learning about internet.	Learning about how to use internet	Constructive Approach	White Board board, Computer, learning Video, Book	1 Real life situations 2 Practical Based Learning	Draw browsers icons in computer note book.	Search some topics on internet and create one PPT file.
FEB. 26	**Revision**						
	FINAL PRACTICAL ASSESSMENT						
MARCH 26	**ANNUAL ASSESSMENT**						

SIGNATURE OF HOD _____
[NAVEEN SHARMA]

SIGNATURE OF PRINCIPAL_____
[ANJU SHARMA]

HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF COMPUTER SCIENCE

CLASS V [COMPUTER + A.I.]

Session – 2025-26

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
APRIL	How computer evolved	Learn about the evolution of computer in various generation, computer memory and its type	Constructive Approach	White Board board, Computer Lab, Book https://www.youtube.com/watch?v=gjVX47dLlN8	Classroom discussion	Draw one chart to show the evolution of computer generation	Create a PowerPoint Presentation on generation of computer and memory and its types.
JULY	Learning window 10	Learning about the different features of window 10	integrative approach	White Board board, Computer, learning Videos, Book	1 Classroom discussion 2 Problem based learning	Draw the task bar of window 10	Explaining the features of window 10
AUGUST	Advanced feature of MSWord	Learn to add symbols and shapes in MS word 2016	constructive approach	White Board board, Computer, Book	1 Classroom discussion 2 Practical Based Learning	Draw any five shapes.	Design the page in MS word. Give the page colour of your choice.
	FIRST PERIODIC ASSESSMENT						
SEPTEMBER	Mail Merge	Learn about the mail merge feature, create the main document and the data sources of mail merge	Inquiry based approach	White Board board, Computer, Book https://www.youtube.com/watch?v=do9ujnZLIC4	1 Activities (Sent a testing Mail to your teacher) 2 Practical Based Learning	Write a birthday party invitation letter to be sent to your friends in note book.	Explaining how to merge data source and the main document

HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF COMPUTER SCIENCE

	MID TERM ASSESSMENT						
OCTOBER	Improving Presentations	Learning about the different objects such as word art, picture and shapes.	Constructive Approach	White Board board, Computer, Book	1 Classroom discussion 2 Practical Based Learning	Create a PowerPoint presentation on the topic of Unity in Diversity.	Create a PPT on the topic '**our continent'** using Ms-power point.
	Learning scratch	Student will understand about scratch Programming.	Constructive Approach	Computer, Book https://www.youtube.com/watch?v=D-nW4jvzRr8	1 Activities (create scratch program) 2 Practical Based Learning	Scratch provides the facility to count the letters that are used to form a word. Create a sprite script to display the total number of letters in a word.	Explaining sensing block and its execution.
NOVEMBER	Learning MS-excel 2016	Learning about how to create spread sheet software.	Constructive Approach	Computer Book	1 Classroom discussion, Computer Practical	Draw report card 5 students and their marks in five subjects your note book	Create a new work sheet and entering data in a worksheet.
	SECOND PERIODIC ASSESSMENT						
DECEMBER	World wide web	Learning about the history and development of the internet.	Inquiry Approach	Computer, Book https://www.youtube.com/watch?v=lYUMqsqNAdM	Classroom discussion practical in computer lab.	Write different types of internet connections in note book .Draw different types of browsers icons.	Explaining how to accessing the internet.
JANURARY 26	Learning flow chart and algorithm	Learning about the flow chart and algorithm.	Constructive approach	White board, Books https://www.youtube.com/watch?v=RwnY_mJ6ras	Classroom discussion	Draw a flowchart to divide two numbers and display their quotient.	Explaining problem solving method. Create an algorithm to find the area of a square.

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FEB. 26	REVISION
	FINAL PRACTICAL
MARCH 26	ANNUAL ASSESSMENT

SIGNATURE OF HOD _____
[Naveen Sharma]

SIGNATURE OF PRINCIPAL_____
[Anju Sharma]

HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF COMPUTER SCIENCE

CLASS VI [COMPUTER + A.I.]

Session – 2025-26

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
APRIL	Programming Language	Learn about the computer Languages like Machine language, Assembly and High-level languages	Constructive Approach	White Board board, Computer Lab, Book	1 Classroom discussion 2 Problem based learning 2 Project	Create one chart to show the Generation of Computer programming Language.	Create a PowerPoint Presentation on 'Programming Languages and their benefits'.
JULY	Advance Features of Power point	Learning about the Power point presentation	Inquiry based approach	White Board board, Computer, learning Videos, Book	1 Classroom discussion 2 Practical Based Learning	Create Poer point presentation on the topic is unity of diversity	Create a photo album using the pictures of your family members. Also include some Music on the slides to be played at the background, using MS PowerPoint 2016.
AUGUST	Editing In MS Excel	Learning about the MS Excel	Inquiry based approach	White Board board, Computer, learning Videos, Book	1 Classroom discussion 2 Practical Based Learning	Create time table in notebook with the help of excel.	Create a grocery list in Excel for 10 items
	FIRST PERIODIC ASSESSMENT						
SEPTEMBER	MS Excel Formulas and Functions	Learn about MS Excel Formulas and functions	Inquiry based approach	White Board board, Computer, learning Videos, Book	1 Classroom discussion	Create Marksheet in Excel in your notebook with total and percentage with formulas.	Create a grocery list in Excel for 10 items and apply formulas to calculate the rate and Total Amount.

HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF COMPUTER SCIENCE

OCTOBER	**MID TERM ASSESSMENT**						
	Computational Thinking	Learning about Computational Thinking Importance of Computational Thinking	Constructive Approach	White Board board, Computer, Book	1 Classroom discussion	Write a short story that describes the use of computational thing.	Complete the Critical Thinking Section given on page no. 64 and 65 of your computers Text book.
	Python Programming	Student will understand about python programming Language.	Constructive Approach	White Board board, Computer, Book	1 Activities (prepare Python Program)	Write advantages of python in chart.	Create 5 Python basic programs. (addition, subtraction etc)
NOVEMBER	About HTML	Learning about how to create web pages in HTML.	Constructive Approach	Green board, Computer Book	1 Classroom discussion 2 Practical Based Learning	Write the feathers of HTML in notebook.	Create web page that displays two tourist destination you would like to visit use specifications given below to create the webpage.
DECEMBER	**SECOND PERIODIC ASSESSMENT**						
	About AI	Learning about the basic of Artificial Intelligence.	Constructive Approach	White Board board, Computer, learning Video, Book	2 Real life situations	Create one chart to show the various elements of AI.	Using shapes tool in MS Word show the various elements of AI
JANURARY 26	**REVISION**						
FEB. 26	**FINAL PRACTICAL ASSESSMENT**						
MARCH 26	**ANNUAL ASSESSMENT**						

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[Naveen Sharma]

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HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF COMPUTER SCIENCE

CLASS- VII [COMPUTER+A.I.]

Session – 2025-26

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
APRIL	Learning Excel	Learning about the new features of MS Excel.	Constructive Approach	White board, Computer, learning Videos	1 Classroom discussion 2 Problem based learning	Create time table in notebook with the help of excel.	Create a list of 5 students and their marks in any 5 subjects in excel software and calculate percentage and show the Marks with different charts in Excel.
JULY	Learning Python	Student will understand about python programming Language.	Constructive Approach	White Board board, Computer, Book	1 Activities (Create python program)	Write advantages of python in chart sheet.	Create 5 Python basic programs.
AUGUST	Learning Conditional Statements	Students will understand about Loops in Python Language.	Constructive Approach	Green board, Computer, learning	1 Classroom discussion 2 Problem based learning	Write 5 Python looping based programs in notebook.	Create 5 Python looping based programs.
	FIRST PERIODIC ASSESSMENT						
SEPTEMBER	About Big Data	Learning about how to work on Big data	Constructive Approach	Green board, Computer, learning Video	Real life situation	Create one chart in MS Word and add the 6 v's of Big Data.	Create presentation on how big data can help us improve the health care facilities
OCTOBER	**MID TERM ASSESSMENT**						
	About Machine Learning	Learning about how machine are learning and working;	Constructive Approach	Green board, Computer, learning Video	Real life situation	Create a chart sheet On Machine Learning as it is part of AI.	Create a word file on Machine Learning with shape tools define it is part of AI

	Cyber Threats, crimes and safety	Learning about how to protect our devices on internet and what is cybercrime.	Constructive Approach	Green board, Computer	1 Classroom discussion,	Create one poster about awareness of cybercrime.	Create word file and write about cyber laws.
NOVEMBER	Learning HTML	Learning about how to create web pages using HTML	Constructive Approach	Green board, Computer, learning Video	1 Activities (Create HTML File) 2 Real life situations	Draw 10 HTML tags on a chart and explain their uses.	Every student creates one web site of 5 pages.
DECEMBER	**SECOND PERIODIC ASSESSMENT**						
	About cascading style sheets	Learning about how to decorate the web pages.	Constructive Approach	Green board, Computer, learning Video	1 Activities Create HTML File using css 2 Real life situations	Draw the CSS code to explain the uses of CSS	Decorate your web site using CSS.
JANURARY 26	Animation with krita	Learning about how to create animations using krita software.	Constructive Approach	Green board, Computer, learning Video	Real life situations	Write the feathers of Krita Software in notebook.	Create one animated file using krita software.
	REVISION						
FEB. 26	**FINAL PRACTICAL**						
MARCH 26	**ANNUAL ASSESSMENT**						

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HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF COMPUTER SCIENCE

CLASS- VIII [COMPUTER+A.I.]

Session – 2025-26

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
APRIL	Computer Network	Learn about computer network	Constructive Approach	Black board, https://www.youtube.com/watch?v=xYwPOKJnqC0	1 Classroom discussion 2 Problem based learning	Create chart draw 5 networking devices.	Create power point presentation on wired and wireless network.
JULY	Introduction to MS Access	Learning about MS Access software	Inquiry based approach	Black board, Computer, learning Videos	1 Classroom discussion 2 Problem based learning	Create Chart sheet to explain the data types in Access.	Create one database in Computer.
AUGUST	Working with Queries Forms and reports	Learning about how to create Queries Forms and reports in MS Access	Constructive Approach	Green board, Computer, learning Video	Real life situations	Write CRUD operation queries in notebook.	Create one database with name school and one table with name class8 with 4 columns.
	FIRST PERIODIC ASSESSMENT						
SEPTEMBER	Cloud computing	Learning about how to work on cloud computing and understand about cloud	Constructive Approach	Green board, https://www.youtube.com/watch?v=8C_kHJ5YEiA	1 Activities (Create PPT file on clouded computing) 2 Real life situations	Draw a chart to explain about the services provided by cloud computing.	Crete one account on any cloud application and upload 10 files on cloude
	Basics of Python or Revision of previous classes	Learning about how to work on python language	Constructive Approach	Green board, Computer, learning Video	Real life situations	Write advantages and disadvantages of python in chart sheet.	Create python programs (10 min.)

HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF COMPUTER SCIENCE

	MID TERM ASSESSMENT						
OCTOBER	Learning Loops/ Iterative statements.	Learning about how to work on python language loops	Constructive Approach	Green board, Computer, learning Video	Activities (Create Python programs) 2 Real life situations	Create 5 python programs using loops in Notebook	Create python programs using loops (5 min.)
NOVEMBER	Sound Editing with Audacity	Learning about how to edit sound with audacity software.	Constructive Approach	Green board, Computer, learning Video	1 Activities (Edit sound)	Write five effects of sound with their uses. in Notebook.	Edit one song using audacity software.
DECEMBER	Learning App development - Thunkable	Learning about how to create app	Constructive Approach	Green board, Computer, learning Video	1 Activities 2 Real life situations	Write the feathers of Thunkable software in Chart sheet.	Try to create one app using Thunkable software.
	SECOND PERIODIC ASSESSMENT						
	Internet Ethics	Learning about how to use internet and rules of using internet.	Constructive Approach	Green board, Computer, learning Video	1 Activities 2 Real life situations	Create one poster to aware about cybercrime.	Create a presentation on cyber literacy.
JANURARY 26	**REVISION**						
FEB. 26	**FINAL PRACTICAL ASSESSMENT**						
MARCH 26	**ANNUAL ASSESSMENT**						

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ARTIFICIAL INTELLIGENCE (SUB. CODE 417)

CLASS – IX

OBJECTIVES OF THE COURSE:

The objective of this module/curriculum - which combines both Inspire and Acquire modules is to develop a readiness for understanding and appreciating Artificial Intelligence and its application in our lives. This module/curriculum focuses on:

1. Helping learners understand the world of Artificial Intelligence and its applications through games, activities and multi-sensorial learning to become AI-Ready.
2. Introducing the learners to three domains of AI in an age-appropriate manner.
3. Allowing the learners to construct the meaning of AI through interactive participation and engaging hands-on activities.
4. Revisiting AI domains, project cycle and Ethics
5. Introducing the learners to the importance of Math for AI, data literacy and generative AI
6. Introducing the learners to programming skills - Basic python coding language.

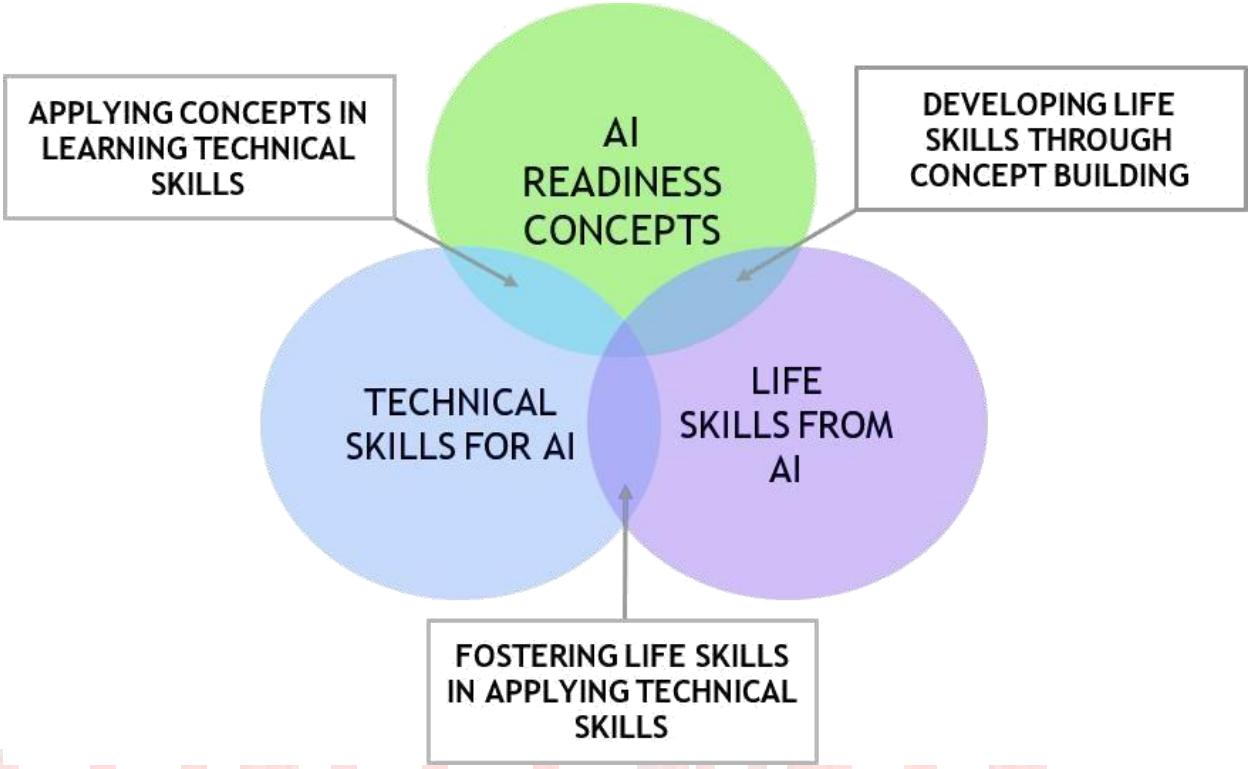
LEARNING OUTCOMES:

Learners will be able to

1. Identify and appreciate Artificial Intelligence and describe its applications in daily life.
2. Relate, apply and reflect on the Human-Machine Interactions to identify and interact with the three domains of AI: Data, Computer Vision and Natural Language Processing and Undergo assessment for analysing their progress towards acquired AI-Readiness skills.
3. Imagine, examine and reflect on the skills required for futuristic job opportunities.
4. Unleash their imagination towards smart homes and build an interactive story around it.
5. Understand the impact of Artificial Intelligence on Sustainable Development Goals to develop responsible citizenship.
6. Research and develop awareness of skills required for jobs of the future.
7. Gain awareness about AI bias and AI access and describe the potential ethical considerations of AI.
8. Develop effective communication and collaborative work skills.
9. Get familiar and motivated towards Artificial Intelligence and Identify the AI Project Cycle framework.
10. Learn problem scoping and ways to set goals for an AI project and understand the iterative nature of problem scoping in the AI project cycle.
11. Brainstorm on the ethical issues involved around the problem selected.
12. Foresee the kind of data required and the kind of analysis to be done, identify data requirements and find reliable sources to obtain relevant data.
13. Use various types of graphs to visualize acquired data.
14. Understand types of modeling.

15. Understand the importance of Math for AI.
16. Learn the concept of data literacy and generative AI
17. Acquire introductory Python programming skills in a very user-friendly format.

SKILLS TO BE DEVELOPED:



SCHEME OF STUDIES:

This course is a planned sequence of instructions consisting of units meant for developing employability and vocational competencies of students of Class IX opting for skill subject along with other education subjects.

The unit-wise distribution of hours and marks for class IX & X is as follows:

ARTIFICIAL INTELLIGENCE (SUBJECT CODE 417)
CLASS – IX (SESSION 2025-2026)

Total Marks: 100 (Theory-50 + Practical-50)

	UNITS	NO. OF HOURS for Theory and Practical		MAX. MARKS for Theory and Practical
PART - A	**Employability Skills**			
	Unit 1: Communication Skills-I	10		2
	Unit 2: Self-Management Skills-I	10		2
	Unit 3: ICT Skills-I	10		2
	Unit 4: Entrepreneurial Skills-I	15		2
	Unit 5: Green Skills-I	05		2
	Total	**50**		**10**
PART - B	**Subject Specific Skills**			
		Theory	**Practical**	
	Unit 1: AI Reflection, Project Cycle and Ethics	30	25	10
	Unit 2: Data Literacy	22	28	10
	Unit 3: Math for AI (Statistics & Probability)	12	13	07
	Unit 4: Introduction to Generative AI	08	12	05
	Unit 5: Introduction to Python	01	09	08
	Total	**160**		**40**
PART - C	**Practical Work**			
	Unit 5: Introduction to Python **Practical File (minimum 15 programs)**			15
	Practical Examination ● Simple programs using input and output function ● Variables, Arithmetic Operators, Expressions, Data Types ● Flow of control and conditions ● Lists **** Any 3 programs based on the above topics***			15
	Viva Voce			5
	Total			**35**
PART - D	**Project Work / Field Visit / Student Portfolio** **** relate it to Sustainable Development Goals***			15
	Total			**15**
	GRAND TOTAL	**210**		**100**

DETAILED CURRICULUM/TOPICS FOR CLASS IX:

PART-A: EMPLOYABILITY SKILLS

S. No.	Units	Duration in Hours
1.	Unit 1: Communication Skills-I	10
2.	Unit 2: Self-management Skills-I	10
3.	Unit 3: Information and Communication Technology Skills-I	10
4.	Unit 4: Entrepreneurial Skills-I	15
5.	Unit 5: Green Skills-I	05
	TOTAL	**50**

UNIT 1: COMMUNICATION SKILLS – I

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Demonstrate knowledge of various methods of communication	1.Methods of communication -Verbal -Non-verbal -Visual	1. Writing pros and cons of written, verbal and non-verbal communication 2. Listing do's and don'ts for avoiding common body language mistakes
2. Identify elements of communication cycle	1. Meaning of communication 2. Importance of communication skills 3. Elements of communication cycle– sender, ideas, encoding, communication channel, receiver, decoding, and feedback	1. Draw a diagram of communication cycle 2. Role plays on communication process related to the sector/job role
3.Identify the factors affecting our perspectives in communication	1. Perspectives in communication 2. Factors affecting perspectives in communication -Visual perception -Language -Past experience -Prejudices -Feelings -Environment	1. Group discussion on factors affecting perspectives in communication 2. Sharing of experiences on factors affecting perspectives 3. Sharing experiences on factors affecting communication at workplace
4. Demonstrate the knowledge of basic writing skills	1. Writing skills related to the following: -Phrases -Kinds of sentences -Parts of sentence -Parts of speech -Use of articles -Construction of a paragraph	1. Demonstration and practice of writing sentences and paragraphs on topics related to the subject

UNIT 2: SELF-MANAGEMENT SKILLS – I

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Describe the meaning and importance of self-management	1. Meaning of self-management 2. Positive results of self-management 3. Self-management skills	1. Identification of self-management skills 2. Strength and weakness analysis
2. Identify the factors that helps in building self-confidence	1. Factors that help in building self-confidence – social, cultural, and physical factors 2. Self-confidence building tips - getting rid of the negative thoughts, thinking positively, staying happy with small things, staying clean, hygienic and smart, chatting with positive people, etc.	1. Role play exercises on building self-confidence 2. Use of positive metaphors/ words 3. Positive stroking on wakeup and before going bed 4. Helping others and working for community

UNIT 3: INFORMATION AND COMMUNICATION TECHNOLOGY SKILLS – I

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Describe the role of Information and Communication Technology (ICT) in day-to-day life and workplace	1. Introduction to ICT 2. Role and importance of ICT in personal life and at workplace 3. ICT in our daily life (examples) 4. ICT tools - Mobile, tab, radio, TV, email, etc.	1. Discussion on the role and importance of ICT in personal life and at workplace. 2. Preparing posters / collages for showing the role of ICT at workplace
2. Identify components of basic computer system and their Functions	1. Computer system - Central Processing Unit (CPU), memory, motherboard, storage devices 2. Hardware and software of a computer system 3. Role and functions of Random Access Memory (RAM) and Read Only Memory (ROM) 4. Role and functions of Central Processing Unit 5. Procedure for starting and shutting down a computer	1. Connecting the cables and peripherals to the Central Processing Unit 2. Starting and shutting down a computer 3. Group discussion on the various aspects of hardware and software

LEARNING OUTCOMES	THEORY	PRACTICAL
3. Demonstrate use of various components and peripherals of computer system	1. Peripherals devices and their uses – mouse, keyboard, scanner, webcam, etc. of a computer system	1. Identification of various parts and peripherals of a computer 2. Demonstration and practice on the use of mouse 3. Demonstration and practice on the use of keyboard 4. Demonstration of the uses of printers, webcams, scanner and other peripheral devices 5. Drawing diagram of computer system and labelling it
4. Demonstrate basic computer skills	1. Primary operations on a computer system – input, process, storage, output, communication networking, etc.	1. Identification of the various input and output units and explanation of their purposes

UNIT 4: ENTREPRENEURIAL SKILLS- I

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Identify various types of business activities	1. Types of businesses – service, manufacturing, hybrid 2. Types of businesses found in our community Business activities around us	1. Prepare posters of business activities found in cities/villages, using pictures 2. Discuss the various types of activities, generally adopted by small businesses in a local community 3. Best out of waste 4. Costing of the product made out of waste 5. Selling of items made from waste materials 6. Prepare list of businesses that provides goods and services in exchange for money
2. Demonstrate the knowledge of distinguishing characteristics of entrepreneurship	1. Meaning of entrepreneurship development 2. Distinguishing characteristics of 3. Role and rewards of entrepreneurship	1.Prepare charts showing advantages of entrepreneurship over wages 2. Group discussions on role and features of entrepreneurship 3.Lectures/presentations by entrepreneurs on their experiences and success stories 4.Identify core skills of successful entrepreneur

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Demonstrated the knowledge of the factors =influencing natural resource conservation	1. Introduction to environment, 2. Relationship between society and environment, ecosystem and factors causing imbalance 3. Natural resource conservation 4. Environment protection and conservation	1. Group discussion on hazards of deteriorating environment 2. Prepare posters showing environment conservation 3. Discussion on various factors that influence our environment
2. Describe the importance of green economy and green skills	1. Definition of green economy 2. Importance of green economy	1. Discussion on the benefits of green skills and importance of green economy 2. Prepare a Poster showing the importance of green economy with the help of newspaper/ magazine cuttings

PART-B – SUBJECT SPECIFIC SKILLS

- Unit 1: AI Reflection, Project Cycle and Ethics
- Unit 2: Data Literacy
- Unit 3: Math for AI (Statistics & Probability)
- Unit 4: Introduction to Generative AI
- Unit 5: Introduction to Python

UNIT 1: AI REFLECTION, PROJECT CYCLE AND ETHICS

SUB-UNIT	LEARNING OUTCOMES	SESSION / ACTIVITY / PRACTICAL
AI Reflection	To identify and appreciate Artificial Intelligence and describe its applications in daily life.	Session: Introduction to AI and setting up the context of the curriculum ● **Recommended Activity:** Make a statement about lighting and LUIS will interpret and adjust the house accordingly https://aidemos.microsoft.com/luis/demo
	To recognize, engage and relate with the three realms of AI: , Computer Vision, Data Statistics and Natural Language Processing.	**Recommended Activity: The AI Game** ● Learners to participate in three games based on different AI domains. – Game 1: Rock, Paper and Scissors (based on data) https://next.rockpaperscissors.ai/ – Game 2: Semantris (based on Natural Language Processing - NLP) https://research.google.com/semantris/ – Game 3: Quick Draw (based on Computer Vision - CV) https://quickdraw.withgoogle.com/

SUB-UNIT	LEARNING OUTCOMES	SESSION / ACTIVITY / PRACTICAL
PROJECT CYCLE	Identify the AI Project Cycle framework.	Session**: Introduction to AI Project Cycle** ● Problem Scoping ● Data Acquisition ● Data Exploration ● Modeling ● Evaluation ● Deployment
	Learn problem scoping and ways to set goals for an AI project.	**Session: Problem Scoping** **Activity:** Brainstorm around the theme provided and set a goal for the AI project. ● Discuss various topics within the given theme and select one. ● Fill in the 4Ws problem canvas and a problem statement to learn more about the problem identified in the community/ society ● List down/ Draw a mind map of problems related to the selected topic and choose one problem to be the goal for the project.
	Identify stakeholders involved in the problem scoped. Brainstorm on the ethical issues involved around the problem selected.	● **Activity:** To set actions around the goal. ● List down the stakeholders involved in the problem. ● Search on the current actions taken to solve this problem. ● Think around the ethics involved in the goal of your project.
	Understand the iterative nature of problem scoping for in the AI project cycle. Foresee the kind of data required and the kind of analysis to be done.	**Activity: Data and Analysis** ●What are the data features needed? ● How will the features collected affect the problem? ●Where can you get the data? ●How frequent do you have to collect the data? ●What happens if you don't have enough data? ●What kind of analysis needs to be done? ●How will it be validated? ●How does the analysis inform the action?
	Share what the students have discussed so far.	Presentation: Presenting the goal, actions and data. Teamwork Activity: ● Brainstorming solutions for the problem statement.
	Identify data requirements and find reliable sources to obtain relevant data.	**Session: Data Acquisition** Activity: Introduction to data and its types. ● Students work around the scenarios given to them and think of ways to acquire data. Activity: Data Features ●Identifying the possible data features affecting the problem. Activity: System Maps ● Creating system maps considering data features identified.

SUB-UNIT	LEARNING OUTCOMES	SESSION / ACTIVITY / PRACTICAL
	To understand the purpose of Data Visualisation	**Session:** Data Exploration/ Data Visualisation • Need of visualising data • Ways to visualise data using various types of graphical tools. Quiz Time
	Use various types of graphs to visualise acquired data.	**Recommended Activities:** Let's use Graphical Tools • Selecting an appropriate graphical format and presenting the graph sketched. • Understanding graphs using https://datavizcatalogue.com/ ● Listing of newly learnt data visualization techniques. ● Top 10 Song Prediction: Identify the data features, collect the data and convert into graphical representation. ● Collect and store data in a spreadsheet and create some graphical representations to understand the data effectively.
	Understand modeling (Rule-based & Learning-based)	**Session: Modeling** ●Introduction to modeling and types of models (Rule-based & Learning-based)
	Understand various evaluation techniques.	**Session: Evaluation** Learners will understand about new terms • True Positive • False Positive • True Negative • False Negative
	Challenge students to think about how they can apply their knowledge of deployment in future AI projects and encourage them to continue exploring different deployment methods.	**Session: Deployment** **Recommended Case Study:** Preventable Blindness. **Activity**: Implementation of AI project cycle to develop an AI Model for Personalized Education.
	To understand and reflect on the ethical issues around AI.	**Session: Ethics** **Video Session:** Discussing about AI Ethics **Recommended Activity**: Ethics Awareness ● Students play the role of major stakeholders, and they have to decide what is ethical and what is not for a given scenario. ● Students to explore Moral Machine (https://www.moralmachine.net/) to understand more about the impact of ethical concerns
	To gain awareness around AI bias and AI access.	**Session: AI Bias and AI Access** ● Discussing about the possible bias in data collection ● Discussing about the implications of AI technology

SUB-UNIT	LEARNING OUTCOMES	SESSION / ACTIVITY / PRACTICAL
	To let the students analyse the advantages and disadvantages of Artificial Intelligence.	**Recommended Activity: Balloon Debate** ● Students divide in teams of 3 and 2 teams are given same theme. One team goes in affirmation to AI for their section while the other one goes against it. ● They have to come up with their points as to why AI is beneficial/ harmful for the society.

UNIT 2: DATA LITERACY:

SUB-UNIT	LEARNING OUTCOMES	SESSION / ACTIVITY / PRACTICAL
Basics of data literacy	●Define data literacy and recognize its importance Understand how data literacy enables informed decision-making and critical thinking ● Apply the Data Literacy Process Framework to analyze and interpret data effectively ●Differentiate between Data Privacy and Security ● Identify potential risks associated with data breaches and unauthorized access. ● Learn measures to protect data privacy and enhance data security	**Session: Basics of data literacy** ● Introduction to Data Literacy ● Impact of data Literacy ● How to become Data Literate? ● What are data security and privacy? ● Best Practices for Cyber Security Recommended Activity: Impact of News Articles Reference Videos: ●https://www.youtube.com/watch?v=yhO_t-c3yJY ●https://www.youtube.com/watch?v=aO858HyFbKI ●https://www.cbse.gov.in/cbsenew/documents/Cyber%20Safety.pdf
Acquiring Data, Processing, and Interpreting Data	● Determine the best methods to acquire data. ● Define and describe data interpretation. ●Enlist and explain the different methods of data interpretation. ●Recognize the types of data interpretation. ●Realizethe importance of data interpretation	**Session: Acquiring Data, Processing, and interpreting Data** ● Best Practices for Acquiring Data ● Features of data and Data Preprocessing ● Data Processing and Data Interpretation ●Types of Data Interpretation ● Importance of Data Interpretation **Recommended Activities:** ● Trend analysis● Visualize and Interpret Data
Project Interactive Data Dashboard & Presentation	● Recognize the importance of data visualization ● Discover different methods of data visualization	**Session: Project Interactive Data Dashboard & Presentation** ● Data visualization Using Tableau Reference Links ●https://public.tableau.com/en-us/s/download ●https://www.datawrapper.de/ Video Links: ●https://www.youtube.com/watch?v=NLCzpPRCc7U ●https://www.youtube.com/watch?v=_M8BnosAD78

UNIT 3: MATH FOR AI (Statistics & Probability)

SUB-UNIT	LEARNING OUTCOMES	SESSION / ACTIVITY / PRACTICAL
Importance of Math for AI	Analyzing the data in the form of numbers/images and find the relation/pattern between the them. Use of Math in AI.	**Session: Importance of Math for AI** ● Finding Patterns in Numbers and images. ● Uses of Math - ○ Statistics ○ Linear Algebra ○ Probability ○ Calculus
	Number Patterns Picture Analogy	**Activity:** ● observe the number pattern and find the missing number. ● To find connections between sets of images and use that to solve problems,
Statistics	Understand the concept of Statistics in real life.	Session : ● Definition of Statistics ● Applications ○ Disaster Management ○ Sports ○ Diseases Prediction ○ Weather Forecast
	Application in various real life scenarios	**Activity:** Uses of Statistics in daily life ● Students will explore the applications of statistics in real life .They collect data and can apply various statistical measures to analyze the data. **Activity**: Car Spotting and Tabulating **Purpose**: To implement the concept of data collection , analysis and interpretation. Activity Introduction: ● In this activity, Students will be engaged in data collection and tabulation. ● Data collection plays a key role in Artificial Intelligence as it forms the basis of statistics and interpretation by AI. ● This activity will also require students to answer a set of questions based on the recorded data.
Probability	Understand the concept of Probability in real life and explore various types of events.	**Session: Introduction to Probability** ● How to calculate the probability of an event ● Types of events ● understand the concept of Probability using a relatable example. Exercise: Identify the type of event.
	Application in various real-life scenarios	**Session:** Applications of Probability ● Sports ● Weather Forecast ● Traffic Estimation Exercise: Revision time

UNIT 4: INTRODUCTION TO GENERATIVE AI:

LEARNING OUTCOMES	SESSION / ACTIVITY / PRACTICAL
Students will be able to define Generative AI & classify different kinds.	Recommended Activity: ● **Activity:** Guess the Real Image vs. the AI-generated image
● Students will be able to explain how Generative AI works and recognize how it learns.	**Session:** ● Introduction to Generative AI ● Generative AI vs Conventional AI
	Session: ● Types of Generative AI ● Examples of Generative AI
● Applying Generative AI tools to create content. ● Understanding the ethical considerations of using Generative AI.	**Session:** ● Benefits of using Generative AI ● Limitations of using Generative AI
	Recommended Activities: ● Hands-on Activity: GAN Paint ● Generative AI tools
	Session: ● Ethical considerations of using Generative AI

UNIT 5: INTRODUCTION TO PYTHON:

LEARNING OUTCOMES	SESSION / ACTIVITY / PRACTICAL
Learn basic programming skills through gamified platforms.	**Recommended Activity:** ● Introduction to programming using Online Gaming portals like Code Combat.
Acquire introductory Python programming skills in a very user-friendly format.	**Session:** ● Introduction to Python language ● Introducing python programming and its applications
	Theory + Practical: Python Basics ● Students go through lessons on Python Basics (Variables, Arithmetic Operators, Expressions, Comparison Operators, logical operators, Assignment Operators, Data Types - integer, float, strings, type conversion, using print() and input() functions) ● Students will try some simple problem-solving exercises on Python Compiler.
	Practical: Flow of control and conditions 1. Students go through lessons on conditional and iterative statements (if, for and while) 2. Students will try some basic problem-solving exercises using conditional and iterative statements on Python Compiler.
	Practical: Python Lists 3. Students go through lessons on Python Lists (Simple operations using list) 4. Students will try some basic problem-solving exercises using lists on Python Compiler.

PART-C: PRACTICAL WORK

UNIT 5: INTRODUCTION TO PYTHON: Suggested Program List	
PRINT	● To print personal information like Name, Father's Name, Class, School Name. ● To print the following patterns using multiple print commands-  ● To find square of number 7 ● To find the sum of two numbers 15 and 20. ● To convert length given in kilometers into meters. ● To print the table of 5 up to five terms. ● To calculate Simple Interest if the principle_amount = 2000 rate_of_interest = 4.5 time = 10
INPUT	● To calculate Area and Perimeter of a rectangle ● To calculate Area of a triangle with Base and Height ● To calculating average marks of 3 subjects ● To calculate discounted amount with discount % ● To calculate Surface Area and Volume of a Cuboid
LIST	● 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.

IF, FOR, WHILE	• Program to check if a person can vote • To check the grade of a student • Input a number and check if the number is positive, negative or zero and display an appropriate message • To print first 10 natural numbers • To print first 10 even numbers • To print odd numbers from 1 to n • To print sum of first 10 natural numbers • Program to find the sum of all numbers stored in a list
Important Links	• https://cbseacademic.nic.in/web_material/Curriculum21/publication/secondary/Python_Content_Manual.pdf • https://drive.google.com/drive/folders/1qRAckDculA5i164OUFDlilxb8mT65MMb

PART-D: Project Work / Field Visit / Student Portfolio

* **RELATE IT TO SUSTAINABLE DEVELOPMENT GOALS**

Suggested Projects/ Field Visit / Portfolio (Any one has to be done)

Suggested Projects	1. Create an AI Model using tools like- ○ Teachable Machine (https://teachablemachine.withgoogle.com/) ○ Machine Learning For Kids (https://machinelearningforkids.co.uk/) 2. Choose an issue that pertains to the objectives of sustainable development and carry out the actions listed below. ○ To understand more about the problem identified, create a 4Ws problem canvas. ○ Identify the data features and create a system map to understand relationship between them ○ Visualize the data collected graphically (Spreadsheet software to be used store and visualize the data) ○ Suggest an AI enabled solution to it (Prototype/Research Work)
Suggested Field Visit	Visit to an industry or IT company or any other place that is creating or using AI applications and present the report for the same. Visit can be on physical or virtual mode.
Suggested Student Portfolio	Maintaining a record of all AI activities and projects (For Example Letter to Future self, Smart Home Floor Plan, Future Job Advertisement, Research Work on AI for SDGs and AI in Different Sectors, 4Ws canvas, System Map). (Minimum 5 Activities)

HAPPY DAYS SCHOOL, SHIVPURI (M.P.)
DEPARTMENT OF COMPUTER SCIENCE / AI
SPLIT-UP SYLLABUS: 2025-26

MONTH	CHAPTER	DETAILED SPLIT UP SYLLABUS
APRIL 2025	PART-A: **EMPLOYABILITY SKILLS** Unit 3: ICT Skills - I	1. Introduction to ICT 2.ICT Tools: Smartphones and Tablets- I 3.ICT Tools: Smartphones and Tablets — II 4.Parts of Computer and Peripherals 5.Basic Computer Operations 6.Performing Basic File Operations 7.Communication and Networking — Basics of Internet, Internet Browsing, Introduction to e-mail, Creating an e-mail Account, Writing an e-mail, Receiving and Replying to e-mails
JULY 2025	PART-A: **EMPLOYABILITY SKILLS** Unit 4: Entrepreneurial Skills - I	1. What is Entrepreneurship? 2. Role of Entrepreneurship 3.Qualities of a Successful Entrepreneur 4.Distinguishing Characteristics of Entrepreneurship and Wage Employment 5.Types of Business Activities - Product, Service and Hybrid Businesses 6. Entrepreneurship Development Process
AUGUST 2025	**PART-B – SUBJECT SPECIFIC SKILLS** Unit 5: Introduction to Python	1. Introduction to Language Python 2. Modes of Python 3. Python Programming and its Applications 4. Python Basic -Variables, Arithmetic Operators, Expressions 5. Data Types - integer, float, strings 6. print() and input() functions 7. Python List
SEPTEMBER 2025	**PART-B – SUBJECT SPECIFIC SKILLS** Unit 1: AI Reflection, Project Cycle and Ethics	1. AI Reflection 2. AI PROJECT CYCLE 3. AI Ethics
OCTOBER 2025	**PART-B – SUBJECT SPECIFIC SKILLS** Unit 2: Data Literacy	1. Basics of data literacy 2. Acquiring Data, Processing & Interpreting Data 3. Project Interactive Data Dashboard & Presentation
NOVEMBER 2025	**PART-B – SUBJECT SPECIFIC SKILLS** Unit 3: Math for AI (Statistics & Probability) Unit 4: Introduction to Generative AI	1. Importance of Math for AI 2. Statistics 3. Probability 4. GENERATIVE AI
DECEMBER 2025	**PART-A: EMPLOYABILITY SKILLS** Unit 5: Green Skills-I	1. Society and Environment 2: Conserving Natural Resources 3: Sustainable Development and Green Economy
JANUARY 2026	**PART-A: EMPLOYABILITY SKILLS** Unit 5: Unit 2: Self Management Skills-I	1. Introduction to Self-management: Strengths and Weakness Analysis 2. Self-confidence & Positive Thinking 3. Personal Hygiene 4. Grooming
FEBURARY 2026	**Revision**	**Revision**

SIGNATURE OF HOD _____
[NAVEEN SHARMA]

SIGNATURE OF PRINCIPAL_____
[ANJU SHARMA]

ARTIFICIAL INTELLIGENCE (SUBJECT CODE 417)
CLASS – X
(SESSION 2025-2026)

Total Marks: 100 (Theory-50 + Practical-50)

	UNITS	NO. OF HOURS for Theory and Practical		MAX. MARKS for Theory and Practical
PART - A	**Employability Skills**			
	Unit 1: Communication Skills-II	10		2
	Unit 2: Self-Management Skills-II	10		2
	Unit 3: ICT Skills-II	10		2
	Unit 4: Entrepreneurial Skills-II	10		2
	Unit 5: Green Skills-II	10		2
	Total	**50**		**10**
PART - B	**Subject Specific Skills**	**Theory (hours)**	**Practical (hours)**	**Marks**
	Unit 1: Revisiting AI Project Cycle & Ethical Frameworks for AI	11	4	7
	Unit 2: Advanced Concepts of Modeling in AI	18	7	11
	Unit 3: Evaluating Models	21	4	10
	Unit 4: Statistical Data	–	28	–
	Unit 5: Computer Vision	10	20	4
	Unit 6: Natural Language Processing	20	7	8
	Unit 7: Advance Python		10	–
	Total	**160**		**40**
PART - C	**Practical & Project Work:**			**Marks**
	Practical File with minimum 15 Programs			15
	Practical Examination ● Unit 4: Statistical Data ● Unit 5: Computer Vision ● Unit 6: Natural Language Processing ● Unit 7: Advance Python			15
	Viva Voce			5
	Project Work / Field Visit / Student Portfolio (Anyone to be done)			10
	Viva Voce (related to project work)			5
	Total			**50**
	GRAND TOTAL	**210**		**100**

DETAILED CURRICULUM/TOPICS FOR CLASS X

Part-A: EMPLOYABILITY SKILLS

S. No.	Units	Duration in Hours
1.	Unit 1: Communication Skills-II	10
2.	Unit 2: Self-management Skills-II	10
3.	Unit 3: Information and Communication Technology Skills-II	10
4.	Unit 4: Entrepreneurial Skills-II	10
5.	Unit 5: Green Skills-II	10
	TOTAL	**50**

UNIT 1: COMMUNICATION SKILLS – II

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Demonstrate knowledge of various methods of communication	1. Methods of communication - Verbal - Non-verbal - Visual	1. Writing pros and cons of written, verbal and non-verbal communication 2. Listing do's and don'ts for avoiding common body language mistakes
2. Provide descriptive and specific feedback	1. Communication cycle and importance of feedback 2. Meaning and importance of feedback 3. Descriptive feedback - written comments or conversations 4. Specific and non-specific feedback	1. Constructing sentences for providing descriptive and specific feedback
3. Apply measures to overcome barriers in communication	1. Barriers to effective communication – types and factors 2. Measures to overcome barriers in effective communication	1. Enlisting barriers to effective communication 2. Applying measures to overcome barriers in communication
4. Apply principles of communication	1. Principles of effective communication 2. 7 Cs of effective communication	1. Constructing sentences that convey all facts required by the receiver 2. Expressing in a manner that shows respect to the receiver of the message 3. Exercises and games on applying 7Cs of effective communication

LEARNING OUTCOMES	THEORY	PRACTICAL
5. Demonstrate basic writing skills	1. Writing skills to the following: - Sentence - Phrase - Kinds of Sentences - Parts of Sentence - Parts of Speech - Articles - Construction of a Paragraph	1. Demonstration and practice of writing sentences and paragraphs on topics related to the subject

UNIT 2: SELF - MANAGEMENT SKILLS – II

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Apply stress management techniques	1. Meaning and importance of stress management 2. Stress management techniques – physical exercise, yoga, meditation 3. Enjoying, going to vacations and holidays with family and friends 4. Taking nature walks	1. Exercises on stress management techniques – yoga, meditation, physical exercises 2. Preparing a write-up on an essay on experiences during a holiday trip
2. Demonstrate the ability to work independently	1. Importance of the ability to work independently 2. Describe the types of self-awareness 3. Describe the meaning of self-motivation and self-regulation	1. Demonstration on working independently 2. goals 3. Planning of an activity 4. Executing tasks in a specific period, with no help or directives 5. Demonstration on the qualities required for working independently

UNIT 3: INFORMATION AND COMMUNICATION TECHNOLOGY SKILLS – II

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Distinguish between different operating systems	1.Classes of operating systems 2.Menu, icons and task bar on the desktop 3.File concept, file operations, file organization, directory structures, and file-system structures 4.Creating and managing files and folders	1. Identification of task bar, icons, menu, etc. 2. Demonstration and practicing of creating, renaming and deleting files and folders, saving files in folders and sub-folders, restoring files and folders from recycle bin
2. Apply basic skills for care and maintenance of computer	1. Importance and need of care and maintenance of computer - Cleaning computer components - Preparing maintenance schedule	1. Demonstration of the procedures to be followed for cleaning, care and maintenance of hardware and software

LEARNING OUTCOMES	THEORY	PRACTICAL
	- Protecting computer against viruses - Scanning and cleaning viruses and removing SPAM files, temporary files and folders	

UNIT 4: ENTREPRENEURIAL SKILLS- II

LEARNING OUTCOMES	THEORY	PRACTICAL
1. List the characteristics of successful entrepreneur	1. Entrepreneurship and society 2. Qualities and functions of an entrepreneur 3. Role and importance of an entrepreneur 4. Myth about entrepreneurship 5. Entrepreneurship as a career option	1. Writing a note on entrepreneurship as career option 2. Collecting success stories of first generation and local entrepreneurs 3. Listing the entrepreneurial qualities – analysis of strength and weaknesses 4. Group discussion of self-qualities that students feel are needed to become successful entrepreneur 5. Collect information and related data for a business 6. Make a plan in team for setting up a business

UNIT 5: GREEN SKILLS – II

LEARNING OUTCOMES	THEORY	PRACTICAL
1. Demonstrate the knowledge of importance, problems and solutions related to sustainable development	1. Definition of sustainable development 2. Importance of sustainable development 3. Problems related to sustainable development	1. Identify the problem related to sustainable development in the community 2. Group discussion on the importance of respecting and conserving indigenous knowledge and cultural heritage 3. Discussion on the responsibilities and benefits of environmental citizenship, including the conservation and protection of environmental values 4. Preparing models on rain water harvesting, drip / sprinkler irrigation, vermin-compost, solar energy, solar cooker, etc.

Part-B – SUBJECT SPECIFIC SKILLS

- Unit 1: Revisiting AI Project Cycle & Ethical Frameworks for AI
- Unit 2: Advanced Concepts of Modeling in AI
- Unit 3: Evaluating Models
- Unit 4: Statistical Data
- Unit 5: Computer Vision
- Unit 6: Natural Language Processing
- Unit 7: Advance Python

UNIT 1: Revisiting AI Project Cycle & Ethical Frameworks for AI

SUB-UNIT	LEARNING OUTCOMES	ACTIVITY/ PRACTICAL
AI Project Cycle	Understand the stages of the AI Project Cycle.	**Session:** Revisiting AI Project Cycle
Introduction to AI Domains	Understand the concept of Artificial Intelligence (AI) domains and the illustrations of practical applications within each AI domain.	**Session**: The three domains of AI and their applications.
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.	**Session**: Frameworks, Ethical Framework and need of Ethical Frameworks for AI. Activity: My Goodness https://www.my-goodness.net/
		Session: Types of Ethical Frameworks
		Session: Bioethics and a case study in bioethics.

UNIT 2: Advance Concepts of Modeling in AI

SUB-UNIT	LEARNING OUTCOMES	SESSION/ ACTIVITY/ PRACTICAL
Revisiting AI, ML,DL	Understand AI, ML and DL	**Session:** Differentiate between AI, ML, and DL **Session:** Common terminologies used with data
Modeling	● Familiarize with supervised, unsupervised and reinforcement learning based approach ● Understand subcategories of Supervised, Unsupervised and deep learning models	**Session:** Types of AI Models: Rule Based Approach, Learning Based Approach **Session:** Categories of Machine learning based models: Supervised Learning (https://teachablemachine.withgoogle.com/), Unsupervised Learning (https://experiments.withgoogle.com/ai/drum-machine/view/), Reinforcement Learning **Session:** Subcategories of Supervised Learning Model: Classification Model, Regression Model **Session:** Subcategories of Unsupervised Learning Model: Clustering, Association **Session:** Subcategories of Deep Learning: Artificial Neural networks (ANN), Convolutional Neural Network (CNN)
Artificial Neural Networks	• Understand Neural Networks • Understand how AI makes a decision	**Session:** What is Neural Network? **Session:** How does AI make a Decision? **Activity:** Human Neural Network – The Game **Suggested Neural Network Activity:** https://playground.tensorflow.org/

UNIT 3: Evaluating Models

SUB-UNIT	LEARNING OUTCOMES	SESSION/ ACTIVITY/ PRACTICAL
Importance of Model Evaluation	Understand the role of evaluation in the development and implementation of AI systems.	**Session:** What is evaluation? **Session:** Need of model evaluation

Splitting the training set data or Evaluation	Understand Train-test split method for evaluating the performance of a machine learning algorithm	**Session:** Train-test split
Accuracy and Error	Understand Accuracy and Error for effectively evaluating and improving AI models	**Session:** Accuracy **Session:** Error **Activity:** Find the accuracy of the AI model
Evaluation metrics for classification	Learn about the different types of evaluation techniques in AI, such as Accuracy, Precision, Recall and F1 Score, and their significance.	**Session:** What is Classification? **Session:** 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 around model evaluation	Understand ethical concerns around model evaluation	**Session:** Bias, Transparency, Accuracy

UNIT 4: Statistical Data (To be assessed through Practicals)

SUB-UNIT	LEARNING OUTCOMES	SESSION/ ACTIVITY/ PRACTICAL
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.	**Session: No code AI tool** • Introduction to Data Science & its applications • Meaning of No-Code AI • No-Code and Low-Code. • Some no-code tools **Orange Data Mining Tool:** **https://orangedatamining.com/download/**
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.	**Session** • 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/1f5G-JXyP7EV2fy1hax47YVaH5gyq8KZy/edit?gid=1552557748#gid=1552557748** **Case study using Orange data mining** (Palmer Penguins). Link: https://drive.google.com/drive/u/0/folders/1fmcRVb-ilTyUhmUv4DWT1BFsaCoQ2BmF

UNIT 5: Computer Vision (To be assessed through Theory)

SUB-UNIT	LEARNING OUTCOMES	SESSION/ ACTIVITY/ PRACTICAL
Introduction	Define the concept of Comp. Vision and understand its applications in various fields.	**Session:** Introduction to Computer Vision
		Session: Applications of CV
Concepts of Computer Vision	Understand the basic concepts of image representation, feature extraction, object detection, and segmentation.	**Session:** Understanding CV Concepts ●Computer Vision Tasks ● Basics of Images-Pixel, Resolution, Pixel value ● Grayscale and RGB images
		Activities: ● Game- Emoji Scavenger Hunt https://emojiscavengerhunt.withgoogle.com/ ● RGB Calculator: https://www.w3schools.com/colors/colors_rgb.asp ● Create your own pixel art: www.piskelapp.com ● Create your own convolutions: http://setosa.io/ev/image-kernels/

UNIT 5: Computer Vision (To be assessed through Practicals)

SUB-UNIT	LEARNING OUTCOMES	SESSION/ ACTIVITY/ PRACTICAL
No-Code AI Tools	To demonstrate proficiency in using no-code AI tools for computer vision projects. To deploy models, fine-tune parameters, and interpret results. Skills acquired include data preprocessing, model selection, and project deployment.	**Introduction to Lobe: https://www.lobe.ai/** **Teachable Machine: https://teachablemachine.withgoogle.com/** ● **Activity:** Build a Smart Sorter **Orange Data Mining Tool: https://orangedatamining.com/download/** ● **Activity:** Build a real-world Classification Model: Coral Bleaching (Use Case Walkthrough) ● Link to the steps involved in project development and dataset: https://drive.google.com/drive/folders/1ppJ4d-8yOFJ2G22rHHpjNrK0ejdIAe5Q?usp=sharing
Image Features & Convolution Operator	Apply the convolution operator to process images and extract useful features.	**Session:** Understanding Convolution operator
		Activity: Convolution Operator
Convolution Neural Network	Understand the basic architecture of a CNN and its applications in computer vision and image recognition.	**Session:** Introduction to CNN
		Session: Understanding CNN ● Kernel ● Layers of CNN
		Activity: Testing CNN

UNIT 6: Natural Language Processing (To be assessed through Theory)

SUB-UNIT	LEARNING OUTCOMES	SESSION/ ACTIVITY/ PRACTICAL
Introduction	Comprehend the complexities of natural languages. and elaborate on the need for NLP techniques for machines to understand various natural languages effectively.	**Session:** Features of natural languages. **Session:** Introduction to Natural Language Processing
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.	**Session:** Various real-life applications of NLP **Activity:** Keyword Extraction https://cloud.google.com/natural-language
Stages of Natural Language Processing (NLP)	Understand the concepts like lexicon, syntax, semantics, and logical analysis of input text.	**Session:** Explore the various stages of NLP that involve in understanding and processing human language.
Chatbots	Understand the concept of chatbot and the differences between smartbots and script bots.	**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
Concepts of Natural Language Processing: Text Processing	Learn about the Text Normalization technique used in NLP and the popular NLP model - Bag-of-Words	**Session: Text Processing** ● Text Normalisation ● Bag of Words **Hands-on:** Text processing ● Data Processing ●Bag of Words ● TFIDF

UNIT 6: Natural Language Processing (To be assessed through Practicals)

SUB-UNIT	LEARNING OUTCOMES	SESSION/ ACTIVITY/ PRACTICAL
Natural Language Processing: Use Case Walkthrough	Explore the sentiment analysis process using real-life datasets with the Orange Data Mining tool.	**Session:** Examples of Code and No-code NLP Tools **Session:** Applications of NLP- Introduction to Sentiment Analysis
		Hands-on: Case Walkthrough – Steps involved in project development Link to steps and dataset: https://drive.google.com/drive/u/2/folders/1geFLXxV5890kfcakMfEg_KsH1LPcS_Iz

UNIT 7: ADVANCE PYTHON (To be assessed through Practicals)

SUB-UNIT	LEARNING OUTCOMES	SESSION/ ACTIVITY/ PRACTICAL
Recap	Understand to work with Jupyter Notebook, creating virtual environments, installing Python Packages.	**Session:** Jupyter Notebook
	Able to write basic Python programs using fundamental concepts such as variables, data types, operators, and control structures.	**Session:** Introduction to Python
	Able to use Python built-in functions and libraries.	**Session:** Python Basics

PART-C: PRACTICAL & PROJECT WORK

Practical Work:

Suggested Programs List	Write a program to add the elements of the two • lists. • Write a program to calculate mean, median and mode using Numpy • Write a program to display line chart from (2,5) to (9,10). • Write a program to display a scatter chart for the following points (2,5), (9,10),(8,3),(5,7),(6,18). • Read the csv file saved in your system and display 10 rows. • Read csv file saved in your system and display its information • Write a program to read an image and display using Python • Write a program to read an image and identify its shape using Python
Important Links	Link to AI Activities & steps to AI project development considering real life problem statement along with the required dataset https://docs.google.com/spreadsheets/d/1ZQCTT8RM-l7QfeTzH0n-5wJLBAoiXu7TFM0Pcp31cX0/edit?usp=sharing
Project Work / Field Visit / Student Portfolio *** relate it to Sustainable Development Goals** **Suggested Projects/ Field Visit / Portfolio (any one activity to be one)**	
Sample Projects	**AI Project Development Using** 1. Statistical Data for AI: Prediction of palmer penguin species 2. Computer Vision: Early detection of coral bleaching 3. 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 (to be continued from class IX)	•Maintaining a record of all AI activities •Hackathons •Competitions (CBSE/Inter School) Note: Portfolio should contain minimum 5 activities

MONTH	CHAPTER	DETAILED SPLIT UP SYLLABUS
APRIL	**Part C:** **Unit 3 – Advance Python** (PRACTICAL)	(To be assessed through practicals) Recap – • Jupyter Notebook • Introduction to Python • Python Basics Introduction to Data Science, Applications of Data Science, Revisiting AI Project Cycle, Data Collection, Data Access Python Packages(Practical) **Python data Sciences** (Numpy, Pandas, Matplotlib), Statistics Learning & Data Visualization (Statistics and Standard Deviation)
	Part C: **Unit 4: Statistical Data (Theory)** No code AI tool	Define the concept of Statistical Data and understand its applications in various fields. Define No-Code and LowCode AI. Identify the differences between Code and No-Code AI concerning Statistical Data.
	Part C: **Unit 4: 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.
JULY 25	**Part B:** **UNIT 1:** Revisiting AI Project Cycle & Ethical Frameworks for AI	AI Project Cycle
		Introduction to AI Domains
		Ethical Frameworks of AI
AUGUST 25	**Part B:** **UNIT 2:** Advance Concepts of Modeling in AI	Revisiting AI, ML, DL
		Modeling
		Artificial Neural Networks
SEPTEMBER 25	**Part A:** COMMUNICATION SKILLS – II	Demonstrate knowledge of various methods of communication
		Provide descriptive and specific feedback
		Apply measures to overcome barriers in communication
		Apply principles of communication
		Demonstrate basic writing skills
	PRE MID TERM EXAMINATION	
AUGUST 25	**Part A:** UNIT 3: ICT SKILLS – II	Distinguish between different operating systems
		Apply basic skills for care and maintenance of computer

	Part A: UNIT 4: ENTREPRENEURIAL SKILLS- II	List the characteristics of successful entrepreneur
SEPTEMBER 25	**Part A:** UNIT 4: GREEN SKILLS – II	Demonstrate the knowledge of importance, problems and solutions related to sustainable development
	Part B: UNIT 3: Evaluating Models	Importance of Model Evaluation
		Splitting the training set data for Evaluation
		Accuracy and Error
		Evaluation metrics for classification
OCTOBER 25	**Part B:** UNIT 3: Evaluating Models	Ethical concerns around model evaluation
NOVEMBER 25	**Part B:** **UNIT 5:** Computer Vision (To be assessed through Theory)	Introduction
		Concepts of Computer Vision
	Part C: **UNIT 5:** Computer Vision (To be assessed through Practicals)	No-Code AI Tools
		Image Features & Convolution Operator
		Convolution Neural Network
DECEMBER 25	**Part B:** **UNIT 6:** Natural Language Processing (To be assessed through Theory)	Introduction
		Applications of Natural Language Processing
		Stages of Natural Language Processing (NLP
		Chatbots
		Concepts of Natural Language Processing: Text Processing
	Part C: UNIT 6: Natural Language Processing (To be assessed through Practicals)	Natural Language Processing: Use Case Walk through
JAN. 26	**ANNUAL PRACTICAL EXAMINATION**	
FEB. 26	**ANNUAL BOARD EXAMIATION**	

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