

CBSE | DEPARTMENT OF SKILL EDUCATION

CURRICULUM FOR SESSION 2024-2025

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:

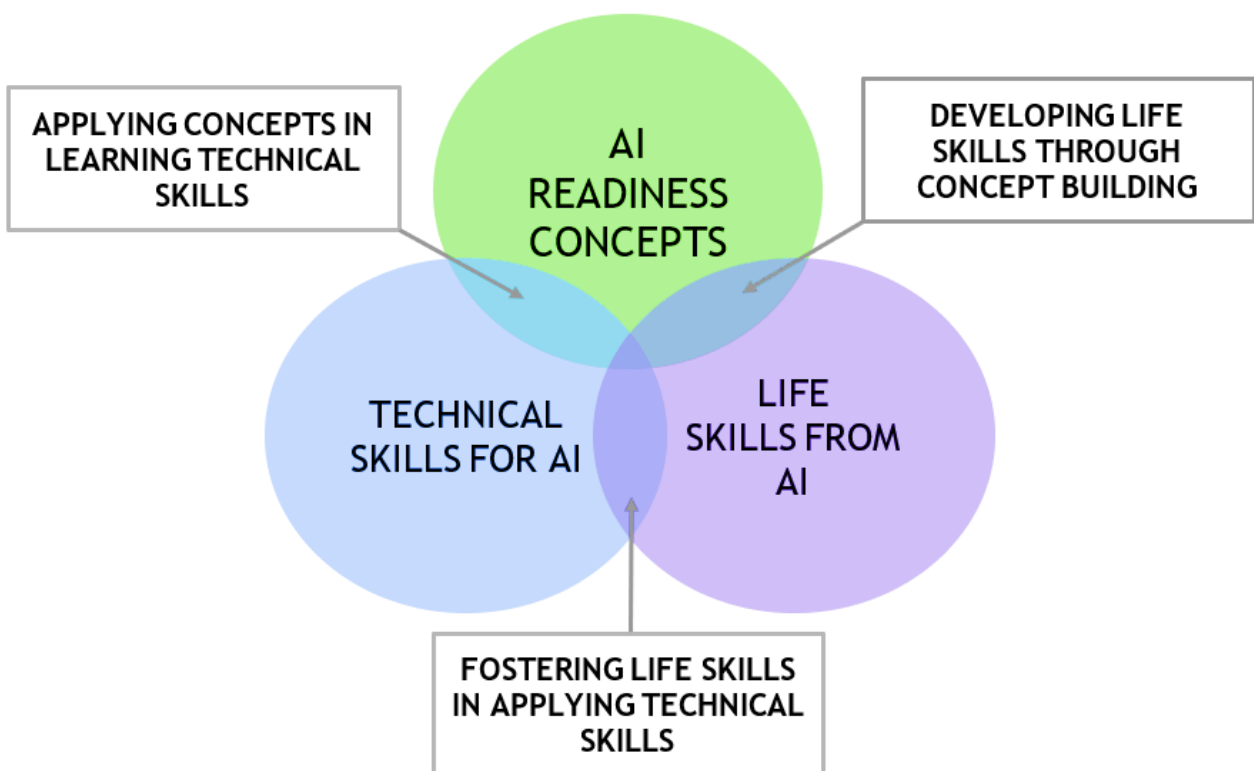
Learners will be able to

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 2024-2025)

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			
	<ul style="list-style-type: none"> • 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

NOTE: Detailed curriculum/ topics to be covered under Part A: Employability Skills can be downloaded from CBSE website.

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
AI PROJECT CYCLE	Identify the AI Project Cycle framework.	Session: Introduction to AI Project Cycle <ul style="list-style-type: none"> ● 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. <ul style="list-style-type: none"> ● 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.	<ul style="list-style-type: none"> ● 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 <ul style="list-style-type: none"> ● 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: <ul style="list-style-type: none"> ● 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. <ul style="list-style-type: none"> ● Students work around the scenarios given to them and think of ways to acquire data. Activity: Data Features <ul style="list-style-type: none"> ● Identifying the possible data features affecting the problem. Activity: System Maps <ul style="list-style-type: none"> ● 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 <ul style="list-style-type: none"> ● 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 <ul style="list-style-type: none"> ● 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 <ul style="list-style-type: none"> ● Introduction to modeling and types of models (Rule-based & Learning-based)
	Understand various evaluation techniques.	Session: Evaluation Learners will understand about new terms <ul style="list-style-type: none"> ● 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 <ul style="list-style-type: none"> ● 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 <ul style="list-style-type: none"> ● 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.	<p>Recommended Activity: Balloon Debate</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<p>Session: Basics of data literacy</p> <ul style="list-style-type: none"> Introduction to Data Literacy Impact of data Literacy How to become Data Literate? What are data security and privacy? How are they related to AI? Best Practices for Cyber Security
		<p>Recommended Activity: Impact of News Articles</p> <p>Reference Videos:</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Determine the best methods to acquire data. Classify different types of data and enlist different methodologies to acquire it. Define and describe data interpretation. Enlist and explain the different methods of data interpretation. Recognize the types of data interpretation. Realize the importance of data interpretation 	<p>Session: Acquiring Data, Processing, and Interpreting Data</p> <ul style="list-style-type: none"> Types of data Data Acquisition/Acquiring 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
		<p>Recommended Activities:</p> <ul style="list-style-type: none"> Trend analysis Visualize and Interpret Data
Project Interactive Data Dashboard & Presentation	<ul style="list-style-type: none"> Recognize the importance of data visualization Discover different methods of data visualization 	<p>Session: Project Interactive Data Dashboard & Presentation</p> <ul style="list-style-type: none"> Data visualization Using Tableau <p>Reference Links</p> <ul style="list-style-type: none"> https://public.tableau.com/en-us/s/download https://www.datawrapper.de/ <p>Video Links:</p> <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> ● Finding Patterns in Numbers and images. ● Uses of Math - <ul style="list-style-type: none"> ○ Statistics ○ Linear Algebra ○ Probability ○ Calculus
	Number Patterns Picture Analogy	Activity: <ul style="list-style-type: none"> ● 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 : <ul style="list-style-type: none"> ● Definition of Statistics ● Applications <ul style="list-style-type: none"> ○ Disaster Management ○ Sports ○ Diseases Prediction ○ Weather Forecast
	Application in various real life scenarios	Activity: Uses of Statistics in daily life <ul style="list-style-type: none"> ● 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: <ul style="list-style-type: none"> ● 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 <ul style="list-style-type: none"> ● 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 <ul style="list-style-type: none"> ● 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: <ul style="list-style-type: none"> Activity: Guess the Real Image vs. the AI-generated image
<ul style="list-style-type: none"> Students will be able to explain how Generative AI works and recognize how it learns. Applying Generative AI tools to create content. Understanding the ethical considerations of using Generative AI. 	Session: <ul style="list-style-type: none"> Introduction to Generative AI Generative AI vs Conventional AI
	Session: <ul style="list-style-type: none"> Types of Generative AI Examples of Generative AI
	Session: <ul style="list-style-type: none"> Benefits of using Generative AI Limitations of using Generative AI
	Recommended Activities: <ul style="list-style-type: none"> Hands-on Activity: GAN Paint Generative AI tools
	Session: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Introduction to programming using Online Gaming portals like Code Combat.
Acquire introductory Python programming skills in a very user-friendly format.	Session: <ul style="list-style-type: none"> Introduction to Python language Introducing python programming and its applications
	Theory + Practical: Python Basics <ul style="list-style-type: none"> 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 <ol style="list-style-type: none"> Students go through lessons on conditional and iterative statements (if, for and while) Students will try some basic problem-solving exercises using conditional and iterative statements on Python Compiler.
	Practical: Python Lists <ol style="list-style-type: none"> Students go through lessons on Python Lists (Simple operations using list) 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	<ul style="list-style-type: none"> ● To print personal information like Name, Father's Name, Class, School Name. ● To print the following patterns using multiple print commands- <div style="border: 2px solid black; padding: 10px; margin: 10px 0; text-align: center;"> <pre style="font-family: monospace; color: red; font-size: 0.8em;"> * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * </pre> </div> <ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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- <ul style="list-style-type: none"> ○ 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] <ul style="list-style-type: none"> ○ 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> • https://cbseacademic.nic.in/web_material/Curriculum21/publication/secondary/Python_Content_Manual.pdf • https://drive.google.com/drive/folders/1qRAckDcuIA5i164OUFDIilxb8mT65MMb
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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	<ol style="list-style-type: none"> 1. Create an AI Model using tools like- <ul style="list-style-type: none"> ○ 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. <ul style="list-style-type: none"> ○ 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 Futureself, 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)

LIST OF ITEMS/ EQUIPMENTS (MINIMUM REQUIREMENTS):

The equipment / materials listed below are required to conduct effective hands-on learning sessions while delivering the AI curriculum to class 10 students. The list below consists of minimal configuration required to execute the AI curriculum for class 10 and create social impact real time solutions/ projects. The quantities mentioned here are recommended for a batch of 20 students keeping the human-machine ratio as 2:1. An exhaustive list may be compiled by the teacher(s) teaching the subject.

S. NO.	ITEM NAME, DESCRIPTION & SPECIFICATION
A	SYSTEM SPECIFICATIONS
1	Processor: Intel® Core™ i5-7300U Processor or equivalent with minimum SYSmark® 2018 Rating of 750 or higher
2	Graphic Card: Integrated graphics
3	Form Factor: - USFF (Ultra Small Form factor) System chassis volume less than One Litre
4	RAM: 8GB DDR4 – 2400MHz or above
5	Storage: 500 GB HDD – 7200 rpm
6	Display: 18.5" LED Monitor with HDMI, in-built-speaker,
7	Keyboard: Keyboard with numerical keypad (recommended)
8	Mouse: Optical Mouse
9	Webcam: Full HD Camera
10	Headphones with Mic
11	Dual Band Wireless Connectivity Min 800 Mbps
12	Bluetooth V4.2 or Higher
13	Ports: 4 USB 3.0 ports, dual high-definition display ports (HDMI 2.0/DP/thunderbolt 3.0 ports), High definition 8-channel audio through HDMI interface or through audio jack.
14	VPU: - Integrated or support for VPU - vision processing unit to accelerate AI machine vision applications.
B	SOFTWARE SPECIFICATIONS
1	Operating System: Any
2	Anti-Virus Activated
3	Internet Browser: Google Chrome
4	Productivity Suite: Any (Google+ Suite recommended)
5	Anaconda Navigator Distribution (https://bit.ly/AI-installation-guide)
6	Conceptual installations (https://bit.ly/AI-installation-guide)
7	Intel Open VINO tools
8	Python

NOTE: In keeping with the spirit of Recycle, Upcycle and Reuse, it is recommended to make use of any equipment/ devices/ accessories from the existing inventory in school.

TEACHER'S/ TRAINER'S QUALIFICATIONS:

Qualification and other requirements for appointment of teachers/trainers for teaching this subject, on contractual basis should be decided by the State/ UT. The suggestive qualifications and minimum competencies for the teacher should be as follows:

Qualification	Minimum Competencies	Age Limit
Diploma in Computer Science/ Information Technology OR Bachelor's Degree in Computer Applications/ Science/ Information Technology (BCA, B. Sc. Computer Science/ Information Technology) OR Graduate with PGDCA OR DOEACC A Level Certificate. <i>The suggested qualification is the minimum criteria. However higher qualifications will also be acceptable.</i>	<ul style="list-style-type: none">• The candidate should have a minimum of 1 year of work experience in the same job role.• S/He should be able to communicate in English and local language.• S/He should have knowledge of equipment, tools, material, Safety, Health & Hygiene.	<ul style="list-style-type: none">• 18-37 years (as on Jan. 01 (year))• Age relaxation to be provided as per Govt. rules

Teachers/Trainers form the backbone of Skill (Vocational) Education being imparted as an integral part of Rashtriya Madhyamik Shiksha Abhiyan (RMSA). They are directly involved in teaching of Skill (vocational) subjects and also serve as a link between the industry and the schools for arranging industry visits, On-the-Job Training (OJT) and placement.

These guidelines have been prepared with an aim to help and guide the States in engaging quality Teachers/Trainers in the schools. Various parameters that need to be looked into while engaging the Vocational Teachers/Trainers are mode and procedure of selection of Teachers/ Trainers, Educational Qualifications, Industry Experience, and Certification/ Accreditation.

The State may engage Teachers/Trainers in schools approved under the component of scheme of Vocationalisation of Secondary and Higher Secondary Education under RMSA in following ways:

- (i) Directly as per the prescribed qualifications and industry experience suggested by the PSS Central Institute of Vocational Education (PSSCIVE), NCERT or the respective Sector Skill Council (SSC).

OR

- (ii) Through accredited Vocational Training Providers accredited under the National Quality Assurance Framework (NQAF*) approved by the National Skill Qualification Committee on 21.07.2016. If the State is engaging Vocational Teachers/Trainers through the Vocational Training Provider (VTP), it should ensure that VTP should have been accredited at NQAF Level 2 or higher.

* *The National Quality Assurance Framework (NQAF) provides the benchmarks or quality criteria which the different organizations involved in education and training must meet in order to be accredited by competent bodies to provide government- funded education and training/skills activities. This is applicable to all organizations offering NSQF-compliant qualifications.*

The educational qualifications required for being a Teacher/Trainer for a particular job role are clearly mentioned in the curriculum for the particular NSQF compliant job role. The State should ensure that teachers/ trainers deployed in the schools have relevant technical competencies for the NSQF qualification being delivered. Teachers/trainers preferably should be certified by the concerned Sector Skill Council for the particular Qualification Pack/Job role which he will be teaching. Copies of relevant certificates and/or record of experience of the teacher/trainer in the industry should be kept as record.

To ensure the quality of the Teachers/trainers, the State should ensure that a standardized procedure for selection of (Vocational) Teachers/trainers is followed. The selection procedure should consist of the following:

- (i) Written test for the technical/domain specific knowledge related to the sector;
- (ii) Interview for assessing the knowledge, interests and aptitude of trainer through a panel of experts from the field and state representatives; and
- (iii) Practical test/mock test in classroom/workshop/laboratory.

In case of appointment through VTPs, the selection may be done based on the above procedure by a committee having representatives of both the State Government and the VTP.

The State should ensure that the Teachers/ Trainers who are recruited should undergo induction training of 20 days for understanding the scheme, NSQF framework and Vocational Pedagogy before being deployed in the schools.

The State should ensure that the existing trainers undergo in-service training of 5 days every year to make them aware of the relevant and new techniques/approaches in their sector and understand the latest trends and policy reforms in vocational education.

The Headmaster/Principal of the school where the scheme is being implemented should facilitate and ensure that the (Vocational) Teachers/trainers:

- Prepare session plans and deliver sessions which have a clear and relevant purpose, and which engage the students;
- Deliver education and training activities to students, based on the curriculum to achieve the learning outcomes;
- Make effective use of learning aids and ICT tools during the classroom sessions;
- Engage students in learning activities, which include a mix of different methodologies, such as project-based work, teamwork, practical and simulation-based learning experiences;
- Work with the institution's management to organise skill demonstrations, site visits, on-job trainings, and presentations for students in cooperation with industry, enterprises and other workplaces;
- Identify the weaknesses of students and assist them in up-gradation of competency;
- Cater to different learning styles and level of ability of students;
- Assess the learning needs and abilities, when working with students with different abilities
- Identify any additional support the student may need and help to make special arrangements for that support;
- Provide placement assistance

Assessment and evaluation of (Vocational) Teachers/trainers is very critical for making them aware of their performance and for suggesting corrective actions. The States/UTs should ensure that the performance of the (Vocational) Teachers/trainers is appraised annually. Performance based appraisal in relation to certain pre-established criteria and objectives should be done periodically to ensure the quality of the (Vocational) Teachers/trainers.

Following parameters may be considered during the appraisal process:

- Participation in guidance and counseling activities conducted at Institutional, District and State level;
- Adoption of innovative teaching and training methods;
- Improvement in result of vocational students of Class X or Class XII;
- Continuous up-gradation of knowledge and skills related to the vocational pedagogy, communication skills and vocational subject;
- Membership of professional society at District, State, Regional, National and International level;
- Development of teaching-learning materials in the subject area;
- Efforts made in developing linkages with the Industry/Establishments;
- Efforts made towards involving the local community in Vocational Education
- Publication of papers in National and International Journals;
- Organisation of activities for promotion of vocational subjects;
- Involvement in placement of students/student support services.