

LEARNING OUTCOME BASED VOCATIONAL CURRICULUM

JOB ROLE

JUNIOR CYBER SECURITY ASSOCIATE

(G-04-IT-00351-2023-V1-NIELIT)

SECTOR: IT-ITeS
Grades XI and XII



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NCERT

PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION

(a constituent unit of NCERT, under Ministry of Education, Government of India)

Shyamla Hills, Bhopal- 462 002, M.P., INDIA

www.psscive.ac.in

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Junior Cyber Security Associate

October, 2024

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FOREWORD

The Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE), a constituent of the National Council of Educational Research and Training (NCERT) is spearheading the efforts of developing learning outcome-based curricula and courseware aimed at integrating both vocational and general education to open pathways of career progression for students. The curriculum has been developed for the vocational education programme introduced under the Centrally Sponsored Scheme of Samagra Shiksha of the Ministry of Education (erstwhile, Ministry of Human Resource Development) and is aligned to the National Skill Qualification Framework (NSQF). The curricula for vocational courses are being developed under the project approved by the Project Approval Board (PAB) of 'Samagra Shiksha', which is an overarching programme for the school education sector extending from pre-school to Grade 12.

It is a matter of great pleasure to introduce this learning outcome-based curriculum as part of the vocational education and training package for the job role/vocational subject of **"IT-ITeS – Junior Cyber Security Associate"**. The curriculum has been developed for the secondary students of Grades 11 and 12 and is aligned to the National Occupation Standards (NOSs) for the job role. The curriculum aims to provide children with employability and vocational skills to support occupational mobility and lifelong learning. It will help them to acquire specific occupational skills that meet employers' immediate skill needs. The teaching-learning is to be done through interactive sessions in classrooms, practical activities in laboratories or workshops, projects, field visits, etc. and professional experience is to be provided through on-the-job training.

The curriculum has been developed and reviewed by a group of experts and their contributions are duly acknowledged. The utility of the curriculum will be adjudged by the qualitative improvement that it brings about in teaching-learning. The feedback and suggestions on the content by the teachers and other stakeholders will be of immense value to us in bringing about further improvement in this document.

DINESH PRASAD SAKLANI

Director

National Council of Education Research and Training

PREFACE

India today stands poised at a very exciting juncture in its saga. The potential for achieving inclusive growth is immense and the possibilities are equally exciting. The world is looking at us to deliver sustainable growth and progress. To meet the growing expectations, India will largely depend upon its young workforce. In order to fulfil the growing aspirations of our youth and the demand for a skilled human resource, the Ministry of Education, Government of India introduced the revised Centrally Sponsored Scheme of Vocationalisation of School Education under Samagra Shiksha. For spearheading the scheme, the PSS Central Institute of Vocational Education (PSSCIVE) was entrusted with the responsibility of developing learning outcomebased curricula, student textbooks and e-learning materials for the job roles in various sectors.

The PSSCIVE firmly believes that the vocationalisation of education in the nation needs to be established on a strong footing of philosophical, cultural and sociological traditions and it should aptly address the needs and aspirations of the students besides meeting the skill demands of the industry. In order to honour its commitment to the nation, the PSSCIVE is developing learning outcome-based curricula with the involvement of faculty members and leading experts in the field. It is being done through the concerted efforts of leading academicians, professionals, policymakers, partner institutions, Vocational Education and Training (VET) experts, industry representatives, and teachers.

The expert group, through a series of consultations, working group meetings and use of reference materials develops a National curriculum. We extend our gratitude to all the contributors for selflessly sharing their precious knowledge, acclaimed expertise, and valuable time and positively responding to our request for development of curriculum.

The success of this curriculum depends upon its effective implementation, and it is expected that the managers of vocational education programme, vocational educators, vocational teachers/trainers, and other stakeholders will make earnest efforts to provide better facilities, develop linkages with the industry and foster a conducive learning environment for effectively transacting the curriculum and to achieve the learning outcomes as per the content of the curriculum document.

DEEPAK PALIWAL

Joint Director

PSS Central Institute of Vocational Education

ACKNOWLEDGEMENTS

On behalf of the team at the PSS Central Institute of Vocational Education (PSSCIVE), we are grateful to the members of the Project Approval Board (PAB) of Samagra Shiksha and the officials of the Ministry of Education (MoE), Government of India for the financial support to the project for development of learning outcome-based curricula.

We are grateful to the Director, National Council of Educational Research and Training (NCERT) for his support and guidance. We also acknowledge the contributions of our colleagues at the NCERT, National Council for Vocational Education and Training (NCVET), National Skill Development Corporation (NSDC) and Media and Entertainment Skills Council (MESK) for their academic support and cooperation.

We are grateful to the expert contributors and Dr. Munesh Chandra, Professor (CSE), PSSCIVE, for their earnest effort and contributions in the development of this learning outcome-based curriculum. Their contributions are duly acknowledged.

The contributions made by Vinay Swarup Mehrotra, Professor and Head, Curriculum Development and Evaluation Centre (CDEC), Pinki Khanna, Professor and Head, Programme Planning and Monitoring Cell (PPMC) and Dr. Munesh Chandra, Professor (CSE) and Head, ICT and Computer Centre, PSSCIVE in development of the curriculum for the employability skills are duly acknowledged.

We are also grateful to the Course Coordinator Dr. Munesh Chandra, Professor (CSE), Head, ICT and Computer Centre, Department of Engineering and Technology, PSSCIVE, for bringing out this curriculum in the final form.

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1. COURSE OVERVIEW

COURSE TITLE: CYBER SECURITY ASSOCIATE

Cyber Security Associate s design and build websites. They are typically responsible for designing and maintaining web-based applications that include static and dynamic content. This includes the design, layout, and coding of a website. They test the appearance of the site and technical aspects, such as site speed and how much traffic the site can handle. The website should be visually appealing and easy to navigate, run smoothly and offer easy access points with no loading issues between pages or error messages. Cyber Security Associate s also create site content that requires technical features. They collaborate with website and graphic designers, monitor website traffic, troubleshoot website problems when they arise, and update websites as necessary. Every Cyber Security Associate should know at least the basics of these: HTML, CSS, and JavaScript for the frontend and PHP or Node.js for the backend. A full-stack Cyber Security Associate can do both front-end and back-end development. They may work independently or along with application/functional developers as part of the overall solution that includes a web-based component. This job may require the individual to work independently or in teams. The individual should be result oriented. The individual should also be able to demonstrate skills for communication, creative and logical thinking.

COURSE OUTCOMES: On completion of the course, students should be able to:

- Apply effective oral and written communication skills to interact with customers;
- Identify the principal components of a computer system;
- Demonstrate the basic skills of using computer;
- Demonstrate self-management skills;
- Demonstrate the ability to provide a self-analysis in context of entrepreneurial skills;
- Demonstrate the knowledge of the importance of green skills in meeting the challenges of sustainable development and environment protection;
- Evaluate the functioning of Business Requirement Specification, User Requirements Specification, Software Requirements Specification and Low-Level Design in the web development domain,
- Examine how assumptions, constraints, interfaces determine the process of web designing,
- Collate basic programming structures related to High Level design/Low Level Design and monitor the same,
- Examine how to create software code that is efficient, readable, and maintainable,
- Evaluate the process for converting designs into media and graphic content,
- Examine how to test new products and applications,
- Illustrate various forms of coding tools required for software applications and web designs,
- Convert requirements into web content and graphic designs,
- Discuss the technical validation of a web's HTML implementation,
- Demonstrate effective communication and collaboration with colleagues,
- Apply measures to maintain standards of health and safety at the workplace,
- Use different approaches to effectively manage and share data and information,
- Identify best practices to maintain an inclusive, environmentally sustainable workplace

COURSE REQUIREMENTS: The learner should have basic knowledge of science.

COURSE LEVEL: This course can be taken up at Intermediate level in Grade XI and Grade XII.

COURSE DURATION: Total : 390 hours

Grade 11 : 240(80 T + 160 P) hours

Grade 12 : 150(40 T + 50 P + 60 OJT) hours

2. SCHEME OF UNITS AND ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employ- ability and vocational competencies of students of Grade XI and XII opting for vocational subject along with general education subjects. The unit-wise distribution of hours and marks for Grade XI is as follows :

GRADE XI			
	Units	No. of Hours for Theory and Practical 300	Max. Marks for Theory & Practical 100
Part A	Employability Skills		
Unit 1	Communication Skills – III	20	10
Unit 2	Self-management Skills – III	15	
Unit 3	Basic ICT Skills – III	20	
Unit 4	Entrepreneurial Skills – III	20	
Unit 5	Green Skills – III	15	
	Total Hours	90	10
Part B	Vocational Skills		
Unit 1	Fundamentals of Network and Operating System	90	100 T + 45 P
Unit 2	Fundamentals of Cyber Security	150	
	Total Hours	240	40
Part C	Field Visits (3x5)	15	10
Part D	On the Job Training and Field Visits (3x5)	45	
Part E	Project/ Practical Work		
	Practical File/ Student Portfolio		10
	Practical Work		10
	Written Test		10
	Viva Voce		10
	Total		40
	Total Hours	300	100

The unit-wise distribution of hours and marks for Grade XII is as follows:

GRADE XII			
	Units	No. of Hours for Theory and Practical 300	Max. Marks for Theory & Practical 100
Part A	Employability Skills		
Unit 1	Communication Skills – III	20	10
Unit 2	Self-management Skills – III	15	
Unit 3	Basic ICT Skills – III	20	
Unit 4	Entrepreneurial Skills – III	20	
Unit 5	Green Skills – III	15	
	Total Hours	90	10
Part B	Vocational Skills		
Unit 1	Cryptography and Ethical Hacking	60	100 T + 45 P
Unit 2	Network and Infrastructure Security	30	
	Total Hours	120	40
Part C	Field Visits (3x5)	15	10
Part D	On the Job Training and Field Visits (3x5)	60	30
Part E	Project/ Practical Work		
	Practical File/ Student Portfolio		10
	Practical Work		10
	Written Test		10
	Viva Voce		10
	Total		40
	Total Hours	300	100

3. TEACHING/TRAINING ACTIVITIES

The teaching and training activities have to be conducted in classroom, laboratory/workshops and field visits. Students should be taken to field visits for interaction with experts and to expose them to the various tools, equipment, materials, procedures and operations in the workplace.

Special emphasis should be laid on the occupational safety, health and hygiene during the training and field visits.

CLASSROOM ACTIVITIES

Classroom activities are an integral part of this course and interactive lecture sessions, followed by discussions should be conducted by trained vocational teachers. Vocational teachers should make effective use of a variety of instructional aids, such as audio-video materials, colour slides, charts, diagrams, models, exhibits, hand-outs, online teaching materials, etc. to transmit knowledge and impart training to the students.

PRACTICAL WORK IN LABORATORY/WORKSHOP

Practical work may include but not limited to hands-on-training, simulated training, role play, case-based studies, exercises, etc. Equipment and supplies should be provided to enhance hands-on learning experience of students. Only trained personnel should teach specialized techniques. A training plan that reflects tools, equipment, materials, skills and activities to be performed by the students should be submitted by the vocational teacher to the Head of the Institution.

FIELD VISITS/ EDUCATIONAL TOUR

In field visits, children will go outside the classroom to obtain specific information from experts or to make observations of the activities. A checklist of observations to be made by the students during the field visits should be developed by the Vocational Teachers for systematic collection of information by the students on the various aspects. Principals and Teachers should identify the different opportunities for field visits within a short distance from the school and make necessary arrangements for the visits. At least three field visits should be conducted in a year.

4. ASSESSMENT AND CERTIFICATION

Upon successful completion of the course by the candidate, the Central/ State Examination Board for Secondary Education and the respective Sector Skill Council will certify the competencies.

The National Skills Qualifications Framework (NSQF) is based on outcomes referenced to the National Occupation Standards (NOSs), rather than inputs. The NSQF level descriptors, which are the learning outcomes for each level, include the process, professional knowledge, professional skills, core skills and responsibility. The assessment is to be undertaken to verify that individuals have the knowledge and skills needed to perform a particular job and that the learning programme undertaken has delivered education at a given standard. It should be closely linked to certification so that the individual and the employer could come to know the competencies acquired through the vocational subject or course. The assessment should be reliable, valid, flexible, convenient, cost effective and

above all it should be fair and transparent. Standardized assessment tools should be used for assessment of knowledge of students. Necessary arrangements should be made for using technology in assessment of students.

KNOWLEDGE ASSESSMENT (THEORY)

Knowledge Assessment should include two components: one comprising of internal assessment and second an external examination, including theory examination to be conducted by the Board. The assessment tools shall contain components for testing the knowledge and application of knowledge. The knowledge test can be objective paper-based test or short structured questions based on the content of the curriculum.

WRITTEN TEST

It allows candidates to demonstrate that they have the knowledge and understanding of a given topic. Theory question paper for the vocational subject should be prepared by the subject experts comprising group of experts of academicians, experts from existing vocational subject experts/teachers, and subject experts from university/colleges or industry. The respective Sector Skill Council should be consulted by the Central/State Board for preparing the panel of experts for question paper setting and conducting the examinations.

The blue print for the question paper may be as follows:

Duration: 3 hrs

Max. Mark: 30

	Typology of Question	No. of Questions			Marks
		Very Short Answer (1 mark)	Short Answer (2 Marks)	Long Answer (3 Marks)	
1.	Remembering – (Knowledge based simple recall questions, to know specific facts, terms, concepts, principles, or theories; identify, define or recite, information)	3	2	2	13
2.	Understanding – (Comprehension – to be familiar with meaning and to understand conceptually, interpret, compare, contrast, explain, paraphrase, or interpret information)	2	3	2	14
3.	Application – (Use abstract information in concrete situation, to apply knowledge to new situations: Use given content to interpret a situation, provide an example, or solve a problem)	0	2	1	07
4.	High Order Thinking Skills – (Analysis & Synthesis – Classify, compare, contrast, or differentiate between different pieces of information; Organize and/ or integrate unique pieces of information from a variety of sources)	0	2	0	04
5.	Evaluation – (Appraise, judge, and/or justify the value or worth of a decision or outcome, or to predict outcomes based on values)	0	1	0	02
	Total	5x1=5	10x2=20	5x3=15	40 (20 Q)

SKILL ASSESSMENT (PRACTICAL)

Assessment of skills by the students should be done by the assessors/examiners on the basis of practical demonstration of skills by the candidate, using a competency checklist. The competency checklist should be developed as per the National Occupation Standards (NOSs) given in the Qualification Pack for the Job Role to bring about necessary consistency in the quality of assessment across different sectors and Institutions. The student has to demonstrate competency against the performance criteria defined in the National Occupation Standards and the assessment will indicate that they are 'competent', or are 'not yet competent'. The assessors assessing the skills of the students should possess a current experience in the industry and should have undergone an effective training in assessment principles and practices. The Sector Skill Councils should ensure that the assessors are provided with the training on the assessment of competencies.

Practical examination allows candidates to demonstrate that they have the knowledge and understanding of performing a task. This will include hands-on practical exam and viva voce. For practical, there should be a team of two evaluators – the subject teacher and the expert from the relevant industry certified by the Board or concerned Sector Skill Council. The same team of examiners will conduct the viva voce.

Project Work (individual or group project) is a great way to assess the practical skills on a certain time period or timeline. Project work should be given on the basis of the capability of the individual to perform the tasks or activities involved in the project. Projects should be discussed in the class and the teacher should periodically monitor the progress of the project and provide feedback for improvement and innovation. Field visits should be organised as part of the project work. Field visits can be followed by a small-group work/project work. When the class returns from the field visit, each group might be asked to use the information that they have gathered to prepare presentations or reports of their observations. Project work should be assessed on the basis of practical file or student portfolio.

Student Portfolio is a compilation of documents that supports the candidate's claim of competence. Documents may include reports, articles, photos of products prepared by students in relation to the unit of competency.

Viva voce allows candidates to demonstrate communication skills and content knowledge. Audio or video recording can be done at the time of viva voce. The number of external examiners would be decided as per the existing norms of the Board and these norms should be suitably adopted/adapted as per the specific requirements of the vocational subject. Viva voce should also be conducted to obtain feedback on the student's experiences and learning during the project work/field visits.

CONTINUOUS AND COMPREHENSIVE EVALUATION

Continuous and Comprehensive Evaluation (CCE) refers to a system of school-based evaluation of students that covers all aspects of student's development. In this scheme, the term 'continuous' is meant to emphasize that evaluation of identified aspects of students 'growth and development' is a continuous process rather than an event, built into the total teaching-learning process and spread over the entire span of academic session. The second term 'comprehensive' means that the scheme attempts to cover both the scholastic and the co-scholastic aspects of students' growth and development. For details, the CCE manual of Central Board of Secondary Education (CBSE) or the guidelines issued by the State Boards on the procedure for CCE should be followed by the Institutions.

5. UNIT CONTENTS

GRADE XI, Part A: Employability Skills

Unit No.	Unit Name	Duration in Hours
Unit 1	Communication Skills – III	20
Unit 2	Self-management Skills – III	15
Unit 3	Basic ICT Skills – III	20
Unit 4	Entrepreneurial Skills – III	20
Unit 5	Green Skills – III	15
	Total	90

Unit 1: Communication Skills – III				
Sn	Learning Outcome	Theory (08 Hours)	Practical (12 Hours)	20
1	Demonstrate knowledge of communication	<ul style="list-style-type: none"> • Introduction to communication • Importance of communication • Elements of communication • Perspectives in communication • Effective communication 	<ul style="list-style-type: none"> • Role-play on the communication process • Group discussion on the importance of communication and factors affecting perspectives in communication • Charts preparation on elements of communication • Classroom discussion on the 7Cs (i.e. Clear, Concise, Concrete, Correct, Coherent, Courteous and Complete) for effective communication 	03
2	Demonstrate verbal communication	<ul style="list-style-type: none"> • Verbal communication • Public Speaking 	<ul style="list-style-type: none"> • Role play of a phone conversation • Group activity on delivering a speech and practicing public speaking 	02

3	Demonstrate non- verbal communication	<ul style="list-style-type: none"> • Importance of non-verbal communication, • Types of non-verbal communication, • Visual communication 	<ul style="list-style-type: none"> • Role plays on non-verbal communication • Group exercise and discussion on Do's and Don'ts to avoid body language mistakes • Group activity on methods of communication 	02
4	Demonstrate speech using correct	<ul style="list-style-type: none"> • Pronunciation basics, • Speaking properly, • Phonetics, pronunciation 	<ul style="list-style-type: none"> • Group activities on practicing pronunciation 	01
5	Apply an assertive communication style	<ul style="list-style-type: none"> • Important communication styles, • Assertive communication, • Advantages of assertive communication, • Practicing assertive communication 	<ul style="list-style-type: none"> • Group discussion on communication styles, • Group discussion on observing and sharing communication styles 	02
6	Demonstrate the knowledge of saying no	<ul style="list-style-type: none"> • Steps for saying "No" • Connecting words 	<ul style="list-style-type: none"> • Group discussion on how to say 'No' 	01
7	Identify and use parts of speech in writing	<ul style="list-style-type: none"> • Capitalization, • Punctuation, • Basic parts of speech, • Supporting parts of speech 	<ul style="list-style-type: none"> • Group activity on identifying parts of speech, • Writing a paragraph with punctuation marks, • Group activity on constructing sentences, • Group activity on identifying parts of speech 	02
8	Write correct sentences and paragraphs	<ul style="list-style-type: none"> • Parts of a sentence • Types of object • Types of sentences • Paragraph 	<ul style="list-style-type: none"> • Activity on framing sentences • Activity on active and passive voice • Assignment on writing different types of sentences. 	01

9	Communicate with people	<ul style="list-style-type: none"> Greetings, Introducing self and others 	<ul style="list-style-type: none"> Role-play on formal and informal greetings, Role-play on introducing someone, Practice and group discussion on how to greet different people 	01
10	Introduce yourself to others and write about oneself	<ul style="list-style-type: none"> Talking about self Filling a form 	<ul style="list-style-type: none"> Practicing self-introduction and filling up forms Practicing self-introduction to others 	01
11	Develop questioning skill	<ul style="list-style-type: none"> Main types of questions, Forming closed and open-ended questions 	<ul style="list-style-type: none"> Practice exercise on forming questions, Group activity on framing questions. 	01
12	Communicate information about family to others	<ul style="list-style-type: none"> Names of relatives, Relations 	<ul style="list-style-type: none"> Practice taking about family, Role-ply on talking about family members 	01
13	Describe habits and routines	<ul style="list-style-type: none"> Concept of habits and routines 	<ul style="list-style-type: none"> Group discussion on habits and routines Group activity on describing routines 	01
14	Ask or give directions to others	<ul style="list-style-type: none"> Asking for directions, Using landmarks 	<ul style="list-style-type: none"> Role-play on asking and giving directions, Identifying symbols used for giving directions 	01
			Total Duration in Hours	20

Unit 2: Self-management Skills – III				
Sn	Learning Outcome	Theory (07 Hours)	Practical (08 Hours)	15
1.	Identify and analyze own strengths and weaknesses	<ul style="list-style-type: none"> Understanding self Techniques for identifying strengths and weaknesses Difference between interests and abilities 	<ul style="list-style-type: none"> Activity on writing aims in life Prepare a worksheet on interests and abilities 	02
2.	Demonstrate personal grooming skills	<ul style="list-style-type: none"> Guidelines for dressing and grooming Preparing a personal grooming checklist 	<ul style="list-style-type: none"> Role-play on dressing and grooming standards Self-reflection activity on various aspects of personal grooming 	02
3.	Maintain personal hygiene	<ul style="list-style-type: none"> Importance of personal hygiene Three steps to personal hygiene Essential steps of hand washing 	<ul style="list-style-type: none"> Role-play on personal hygiene Assignment on personal hygiene 	02
4.	Demonstrate the knowledge of working in a team and participating in group activities	<ul style="list-style-type: none"> Describe the benefits of teamwork, Working in a team 	<ul style="list-style-type: none"> Assignment on working in a team, Self-reflection on teamwork 	02
5	Develop networking skills	<ul style="list-style-type: none"> Benefits of networking skills, Steps to build networking skills 	<ul style="list-style-type: none"> Group activity on networking in action, Assignment on networking skills 	01
6	Describe the meaning and importance of self-motivation	<ul style="list-style-type: none"> Meaning of self-motivation, Types of motivation, Steps to building self-motivation 	<ul style="list-style-type: none"> Activity on staying motivated, Assignment on reasons hindering motivation 	02
7	Set goals	<ul style="list-style-type: none"> Meaning of goals and purpose of goal-setting, Setting SMART goals 	<ul style="list-style-type: none"> Assignment on setting SMART goals, Activity on developing long-term and short-term goals using SMART method 	02
8	Apply time management strategies and techniques	<ul style="list-style-type: none"> Meaning and importance of time management, Steps for effective time management 	<ul style="list-style-type: none"> Preparing checklist of daily activities 	02
			Total Duration in Hours	15

Unit 3: Information and Communication Technology Skills – III

Sn	Learning Outcome	Theory (08 Hours)	Practical (12 Hours)	20
1.	Create a document on the word processor	<ul style="list-style-type: none"> • Introduction to ICT, • Advantages of using a word processor, • Work with LibreOffice Writer 	<ul style="list-style-type: none"> • Demonstration and practice of the following: • Creating a new document • Typing text • Saving the text • Opening and saving file in Microsoft word/Libre Office Writer 	02
2.	Identify icons on the toolbar	<ul style="list-style-type: none"> • Status bar, • Menu bar, • Icons on the Menu bar, • Multiple ways to perform a function 	<ul style="list-style-type: none"> • Group activity on using basic user interface of LibreOffice writer • Group activity on working with Microsoft Word 	02
3.	Save, close, open and print document	<ul style="list-style-type: none"> • Save a document, • Close a document, • Open an existing document, • Print a document 	<ul style="list-style-type: none"> • Group activity on performing the functions for saving, closing and printing documents in LibreOffice Writer, • Group activity on performing the functions to save, close and print documents 	02
4.	Format text in a document	<ul style="list-style-type: none"> • Change style and size of text • Align text, • Cut, Copy, Paste, • Find and replace 	<ul style="list-style-type: none"> • Group activity on formatting text in LibreOffice Writer, • Group activity on formatting text in Microsoft Word 	02
5.	Check spelling and grammar in a word document	<ul style="list-style-type: none"> • Use of spell checker, • Autocorrect 	<ul style="list-style-type: none"> • Group activity on checking spellings and grammar using LibreOffice Writer • Group activity on checking spellings and grammar using Microsoft Word 	02
6.	Insert lists, tables, pictures, and shapes in a word document	<ul style="list-style-type: none"> • Insert bullet list, • Number list, • Tables, • Pictures, • Shapes 	<ul style="list-style-type: none"> • Practical exercise of inserting lists and tables using LibreOffice Writer 	03
7.	Insert header, footer and page number in a word document	<ul style="list-style-type: none"> • Insert header, • Insert footer, • Insert page number, • Page count 	<ul style="list-style-type: none"> • Practical exercise of inserting header, footer and page numbers in LibreOffice Writer • Practical exercise of inserting header, footer and page numbers in Microsoft Word 	03
8.	Make changes by using the track change option in a word document	<ul style="list-style-type: none"> • Tracking option • Manage option • Compare documents 	<ul style="list-style-type: none"> • Group activity on performing track changes in LibreOffice Writer • Group activity on performing track changes in Microsoft Word 	04
			Total Duration in Hours	20

Unit 4: Entrepreneurial Skills – III

Sn	Learning Outcome	Theory (07 Hours)	Practical (13 Hours)	20
1.	Differentiate between different kinds of businesses	<ul style="list-style-type: none"> • Introduction to entrepreneurship • Types of business activities 	<ul style="list-style-type: none"> • Role play on different kind of business around us 	02
2.	Describe the significance of entrepreneurial values	<ul style="list-style-type: none"> • Meaning of value, • Values of an Entrepreneur, • Case study on qualities of an entrepreneur 	<ul style="list-style-type: none"> • Role play on qualities of an Entrepreneur 	02
3.	Demonstrate the attitudinal changes required to become an entrepreneur	<ul style="list-style-type: none"> • Difference between the attitude of entrepreneur and employee 	<ul style="list-style-type: none"> • Interviewing employees and entrepreneurs 	02
4.	Develop thinking skills like an entrepreneur	<ul style="list-style-type: none"> • Problems of entrepreneurs • Problem-solving, • Ways to think like an entrepreneur 	<ul style="list-style-type: none"> • Group activity on identifying and solving problems 	03
5.	Generate business ideas	<ul style="list-style-type: none"> • The business cycle, • Principles of idea creation, • Generating a business idea, • Case studies 	<ul style="list-style-type: none"> • Brainstorming on generating a business ideas 	03
6.	Describe customer needs and importance of conducting a customer survey	<ul style="list-style-type: none"> • Understanding customer needs • Conducting a customer survey 	<ul style="list-style-type: none"> • Group activity to conduct a customer survey 	04
7.	Create a business plan	<ul style="list-style-type: none"> • Importance of business planning, • Preparing a business plan, • Principles to follow for growing a business, • Case studies 	<ul style="list-style-type: none"> • Group activity on developing a business plan 	04
			Total Duration in Hours	20

Unit 5: Green Skills – III				
Sn	Learning Outcome	Theory (07 Hours)	Practical (08 Hours)	15
1.	Describe the importance of the main sector of the green economy	<ul style="list-style-type: none"> Meaning of ecosystem, food chain and sustainable development Main sectors of the green economy- E-waste management, green transportation, renewal energy, green construction, and water management 	<ul style="list-style-type: none"> Group discussion on sectors of green economy, Poster making on various sectors for promoting green economy 	06
2.	Describe the main recommendations of policies for the green economy	<ul style="list-style-type: none"> Policies for a green economy 	<ul style="list-style-type: none"> Group discussion on initiatives for promoting the green economy, Writing an essay or a short note on the important initiatives for promoting green economy. 	03
3.	Describe the major green sector/area and the role of various stakeholders in the green economy	<ul style="list-style-type: none"> Stakeholders in the green economy 	<ul style="list-style-type: none"> Group discussion on the role of stakeholders in green economy Preparation of posters on green sectors and their stakeholders Making solar bulbs. 	03
4.	Identify the role of government and private agencies in the green economy	<ul style="list-style-type: none"> Role of the government in promoting a green economy, Role of private agencies in promoting green economy 	<ul style="list-style-type: none"> Group discussion on the role of Government and Private Agencies in promoting a green economy. Posters making on green sectors. 	03
			Total Duration in Hours	15

GRADE XI, Part B: Vocational Skills

Unit No.	Unit Name	Duration in Hours
Unit 1	Fundamentals of Network and Operating System	90 (30 T + 60 P)
Unit 2	Fundamentals of Cyber Security	150 (50 T + 100 P)
	Total Duration	240

Unit 1: Fundamentals of Network and Operating System				
Sn	Learning Outcome	Theory (30 Hours)	Practical (60 Hours)	90
1.	Learners will be able to understand the basic components of a computer network	<ul style="list-style-type: none"> • Introduction to Computer Network, its types and Benefits • Computer Networks overview • Illustration of topologies used in networking • Networking devices overview (Repeaters, Hubs, Bridges, Switches, routers...) • Introduction to Transmission modes, Ethernet, and the Transmission Media classification 	<ul style="list-style-type: none"> • Demonstration of Networking Devices (Repeaters, Hubs, Bridges, Switches, routers...) through means of animated videos/simulation • Demonstration of Transmission Media(hardware/video) 	30
2.	Learners will be able to understand the concept of OSI Reference Model & TCP/IP Protocol Suite	<ul style="list-style-type: none"> • Introduction to OSI, TCP/IP Protocol Model and its protocols • Illustration of Port Numbers, Common TCP & UDP Ports • Introduction to RIR, Registries and IANA • IP addressing, Classes, IP Addressing Scheme(basics) overview 	<ul style="list-style-type: none"> • Demonstration of OSI and TCP/IP using simulator/Video • Demonstration of command-line utility: Netstat • Demonstration of IANA and RIR (Video) • Demonstration of IP configuration and troubleshooting 	40
3.	Learners will be able to explore Windows & Linux OS environment	<ul style="list-style-type: none"> • Introduction of Windows/Linux OS and its File System • Overview of command line utility • Basic Commands of Window OS and Linux OS 	<ul style="list-style-type: none"> • Demonstration of File system (Windows / Linux) • Demonstrate and Configuring Permissions, Read, Write, and Execute • Sudo command, working with hard & soft link in Linux 	20
			Total Duration in Hours	150

Unit 2: Fundamentals of Cyber Security

Sn	Learning Outcome	Theory (50 Hours)	Practical (100 Hours)	150
1.	Learners will be able to understand the basics of Information Security	<ul style="list-style-type: none"> • Introduction of Information Security • Describe CIA Triad 	<ul style="list-style-type: none"> • Demonstrate the application of Information security (Simulator/Video) • Demonstrate CIA Triad (Simulator/Video) 	5
2.	Learners will be able to understand the Ethical Hacking and Basic Cryptography	<ul style="list-style-type: none"> • Describe Ethical Hacking • Cryptography overview 	<ul style="list-style-type: none"> • Demonstration of various tools (wireshark...) • Usage of tool (wireshark etc.) to analyze the types of data transferred over network • Perform encryption & decryption using online or offline tool 	20
3.	Learners will be able to understand basics of OS security	<ul style="list-style-type: none"> • Exploring OS security and Access Control • Introduction to security tools for Windows OS 	<ul style="list-style-type: none"> • Demonstrate the security tools (Antivirus tools, firewall, bitlocker...) • Demonstration of windows firewall settings(simulation/video) 	20
4.	Learners will be able to understand basics of Wireless Network and Wireless Security	<ul style="list-style-type: none"> • Introduction of Wireless Networks and their security • Explain various types of Wireless Networks 	<ul style="list-style-type: none"> • Demonstration of various types of Wireless Networks (simulation / video) • Demonstration of the techniques of wireless network security (simulation / video) 	10
5.	Learners will be able to understand the basics of Android and iPhone iOS Operating systems	<ul style="list-style-type: none"> • Introduction of Android OS and iPhone iOS • Describe Specialization and features of Android OS • Describe Specialization and features of iPhone iOS • Basic components of Android 	<ul style="list-style-type: none"> • Demonstrate Android OS/iOS 	15

6.	Learners will be able to understand basics of Web Application Protocols, Terminologies & Browser Security	<ul style="list-style-type: none"> • Introduction of Web application terminologies and Browser Security • Exploring Web Application Protocols 	<ul style="list-style-type: none"> • Demonstration of Web application protocol (video/simulator) • Demonstration of connection establishment between webserver and web client • Demonstration of Browser security setting (video/simulator) 	20
7.	Learners will be aware about Social Media & its security	<ul style="list-style-type: none"> • Introduction to Social Media and Its security • Advantages and Disadvantages of Social Media 	<ul style="list-style-type: none"> • Demonstrate to use various types of social media platforms 	15
8.	Learners will be aware about Digital Payment System and Security	<ul style="list-style-type: none"> • Introduction of digital payment system • Explain digital payment security and threats 	<ul style="list-style-type: none"> • Demonstrate various types of digital payment system and its applications (UPI, Online payments...) • Demonstrate digital payment security issues/ threats 	15
9.	Learners will be able to understand various types of frauds related to banking system	<ul style="list-style-type: none"> • Introduction of Various kinds of fraud in banking • Describe types of banking fraud 	<ul style="list-style-type: none"> • Discuss the case studies related to banking frauds (media coverage...) 	10
10.	Learners will be aware about Cyber Crime, Cyber Law, Cyber Cell and Cyber Fraud Helpline	<ul style="list-style-type: none"> • Introduction of Cyber Crime • Overview of Cyber Law & Cyber cell • Types of Cyber Crime & Cyber Fraud • Advantages of Cyber Law • Different cybercrime classifications • Explain Cyber Fraud Helpline system 	<ul style="list-style-type: none"> • Schedule visit to organization (Cyber cell ...). • Demonstrate the designated helplines and online portals 	20
			Total Duration in Hours	150

GRADE XII, Part A: Employability Skills

Unit No.	Unit Name	Duration (Hrs.)
Unit 1	Communication Skills – IV	20
Unit 2	Self-management Skills – IV	15
Unit 3	Basic ICT Skills – IV	20
Unit 4	Entrepreneurial Skills – IV	20
Unit 5	Green Skills – IV	15
	Total Hours	90

Unit 1: Communication Skills – IV				
Sn	Learning Outcome	Theory (08 Hours)	Practical (12 Hours)	20
1.	Demonstrate active listening skills	<ul style="list-style-type: none"> Active listening -listening skill, stages of active listening, Overcoming barriers to active listening 	<ul style="list-style-type: none"> Group discussion on the factors affecting active listening, Preparing posters of steps for active listening, Role-play on negative effects of not listening actively 	07
2.	Identify the parts of speech	<ul style="list-style-type: none"> Parts of speech – using capitals, punctuation, basic parts of speech, supporting parts of speech 	<ul style="list-style-type: none"> Group practice on identifying parts of speech Group practice on constructing sentences 	07
3.	Write sentences	<ul style="list-style-type: none"> Writing skills to practice the following: <ul style="list-style-type: none"> Simple sentence Complex sentence Types of object Identify the types of sentences Active and Passive sentences Statement/Declarative sentence Question/Interrogative sentence Emotion/Reaction or Exclamatory sentence Order or Imperative sentence 	<ul style="list-style-type: none"> Group activity on writing sentences and paragraphs, Group activity on practicing writing sentences in active or passive voice, Group activity on writing different types of sentences (i.e., declarative, exclamatory, interrogative and imperative) 	06
			Total Duration in Hours	20

Unit 2: Self-management Skills – IV				
Sn	Learning Outcome	Theory (07 Hours)	Practical (08 Hours)	15
1.	Describe the various factors influencing motivation and positive attitude	<ul style="list-style-type: none"> • Motivation and positive attitude • Intrinsic and extrinsic motivation • Positive attitude – ways to maintain positive attitude • Stress and stress management - ways to manage stress 	<ul style="list-style-type: none"> • Role Play on avoiding stressful situation, • Activity on listing negative situations and ways to turn it positive 	06
2.	Describe how to become result oriented	<ul style="list-style-type: none"> • How to become result oriented, • Goal setting – examples of result-oriented goals 	<ul style="list-style-type: none"> • Pair and share activities on the aim of life 	03
3.	Describe the importance of self- awareness and the basic personality traits, types and disorders	<ul style="list-style-type: none"> • Steps towards self-awareness • Personality and basic personality traits • Common personality disorders- • Suspicious • Emotional and impulsive • Anxious • Steps to overcome personality disorders 	<ul style="list-style-type: none"> • Group discussion on self awareness • Group discussion on common personality disorders • Brainstorming steps to overcome personality disorder 	06
			Total Duration in Hours	15

Unit 3: Information and Communication Technology Skills – IV				
Sn	Learning Outcome	Theory (06 Hours)	Practical (14 Hours)	20
1.	Identify the components of a spreadsheet application	<ul style="list-style-type: none"> • Getting started with spreadsheet – types of a spreadsheet, components of a worksheet, • Starting LibreOffice Calc • Creating a worksheet 	<ul style="list-style-type: none"> • Group activity on identifying components of spreadsheet in LibreOffice Calc 	02
2.	Perform basic operations in a spreadsheet	<ul style="list-style-type: none"> • Opening workbook and entering data – types of data, steps to enter data, editing and deleting data in a cell • Selecting multiple cells • Saving the spreadsheet in various formats • Closing the spreadsheet 	<ul style="list-style-type: none"> • Group activity on working with data on LibreOffice Calc 	03

		<ul style="list-style-type: none"> Opening the spreadsheet. Printing the spreadsheet. 		
3.	Demonstrate the knowledge of working with data and formatting text	<ul style="list-style-type: none"> Using a spreadsheet for addition – adding value directly, adding by using cell address, using a mouse to select values in a formula, using sum function, copying and moving formula Need to format cell and content Changing text style/font size Align text in a cell Highlight text 	<ul style="list-style-type: none"> Group activity on formatting a spreadsheet in LibreOffice Calc Group activity on performing basic calculations in LibreOffice Calc. 	02
4.	Demonstrate the knowledge of using advanced features in spreadsheet	<ul style="list-style-type: none"> Sorting data, Filtering data, Protecting spreadsheet with password 	<ul style="list-style-type: none"> Group activity on sorting data in LibreOffice Calc 	03
5.	Make use of the software used for making slide presentations	<ul style="list-style-type: none"> Available presentation software Steps to start LibreOffice Impress Adding text to a presentation 	<ul style="list-style-type: none"> Group practice on working with LibreOffice Impress tools, Group practice on creating a presentation in LibreOffice Impress 	02
6.	Demonstrate the knowledge to open, close and save slide presentations	<ul style="list-style-type: none"> Open, Close, Save and Print a slide presentation 	<ul style="list-style-type: none"> Group activity on saving, closing and opening a presentation in LibreOffice Impress 	01
7.	Demonstrate the operations related to slides and texts in the presentation	<ul style="list-style-type: none"> Working with slides and text in a presentation- adding slides to a presentation, deleting slides, adding and formatting text, highlighting text, aligning text, changing text colour 	<ul style="list-style-type: none"> Group practice on working with font styles and types in LibreOffice Impress 	04
8.	Demonstrate the use of advanced features in a presentation	<ul style="list-style-type: none"> Advanced features used in a presentation, Inserting shapes in the presentation, Inserting clipart and images in a presentation, Changing slide layout 	<ul style="list-style-type: none"> Group activity on changing slide layout on LibreOffice Impress 	03
			Total Duration in Hours	20

Unit 4: Entrepreneurial Skills – IV

Sn	Learning Outcome	Theory (08 Hours)	Practical (12 Hours)	20
1.	Describe the concept of entrepreneurship and the types and roles and functions entrepreneur	<ul style="list-style-type: none"> • Entrepreneurship and entrepreneur • Characteristics of entrepreneurship • Entrepreneurship-art and science • Qualities of a successful entrepreneur • Types of entrepreneurs • Roles and functions of an entrepreneur • What motivates an entrepreneur • Identifying opportunities and risk-taking • Startups 	<ul style="list-style-type: none"> • Group discussion on the topic “An entrepreneur is not born but created”. • Conducting a classroom quiz on various aspects of entrepreneurship. • Chart preparation on types of entrepreneurs • Brainstorming activity on What motivates an entrepreneur 	08
2.	Identify the barriers to entrepreneurship	<ul style="list-style-type: none"> • Barriers to entrepreneurship, • Environmental barriers, • No or faulty business plan, • Personal barriers 	<ul style="list-style-type: none"> • Group discussion about “What we fear about entrepreneurship” • Activity on taking an interview of an entrepreneur. 	04
3.	Identify the attitude that make entrepreneur successful	<ul style="list-style-type: none"> • Entrepreneurial attitude 	<ul style="list-style-type: none"> • Group activity on identifying entrepreneurial attitude. 	04
4.	Demonstrate the knowledge of entrepreneurial attitude and competencies	<ul style="list-style-type: none"> • Entrepreneurial competencies • Decisiveness, • Initiative • Interpersonal skills- positive attitude, stress management • Perseverance • Organisational skills- time management, goal setting, efficiency, managing quality. 	<ul style="list-style-type: none"> • Playing games, such as “Who am I”. • Brainstorming a business ideas • Group practice on “Best out of Waste” • Group discussion on the topic of “Let’s grow together” • Group activity on listing stress and methods to deal with it like Yoga, deep breathing exercise. 	04
			Total Duration in Hours	20

Unit 5: Green Skills – IV

Sn	Learning Outcome	Theory (05 Hours)	Practical (10 Hours)	15
1.	Identify the benefits of the green jobs	<ul style="list-style-type: none"> • Green jobs • Benefits of green jobs • Green jobs in different sectors: • Agriculture • Transportation • Water conservation • Solar and wind energy • Eco-tourism • Building and construction • Solid waste management • Appropriate technology 	<ul style="list-style-type: none"> • Group discussion on the importance of green job, • Chart preparation on green jobs in different sectors. 	08
2	State the importance of green jobs	<ul style="list-style-type: none"> • Importance of green jobs in • Limiting greenhouse gas emissions, • Minimizing waste and pollution, • Protecting and restoring ecosystems, • Adapting to the effects of climate change 	<ul style="list-style-type: none"> • Preparing posters on green jobs, • Group activity on tree plantation. • Brainstorming different ways of minimizing waste and pollution 	0
			Total Duration in Hours	15

GRADE XII, Part B: Vocational Skills

Sn	Units	Duration in Hours
Unit 1	Cryptography and Ethical Hacking	60 (25 T + 35 P)
Unit 2	Network and Infrastructure Security	30 (15 T + 15 P)
	OJT	60
	Total Duration	150

Unit 1: Cryptography and Ethical Hacking				
Sn	Learning Outcome	Theory (25 Hours)	Practical (35 Hours)	60
1.	Learners will gain practical skills in implementing cryptographic techniques and understand its real-world application	<ul style="list-style-type: none"> • Introduction to Cryptography • Understanding Public Key Infrastructure (PKI) • Key Components and Types of PKI Systems 	<ul style="list-style-type: none"> • Hands-on Cryptographic Techniques (Demonstration: video/simulation) 	10
2.	Learners will be able to understand the fundamental concepts of scanning, sniffing and information gathering techniques	<ul style="list-style-type: none"> • Overview of Scanning, Sniffing and Information Gathering techniques • Detailed Explanation of the Scanning Process • Significance of Information Gathering in Security • Overview of Open-source intelligence framework • Detecting network attacks using Wireshark 	<ul style="list-style-type: none"> • Demonstration of Scanning, Sniffing and Information Gathering techniques • using online or offline OSINT based tools (Nmap, Wireshark, whois, social engineering...) 	15
3.	Learners will understand MITM attack types and effective countermeasure techniques to enhance security.	<ul style="list-style-type: none"> • Overview of MITM (man-in-the-middle) attack and its types • Spoofing techniques and its types • Countermeasures techniques • Overview of e-mail Security 	<ul style="list-style-type: none"> • Demonstration of MITM attack and spoofing techniques (simulation / video) 	08
4.	Learners will understand password cracking	<ul style="list-style-type: none"> • Overview of Password attacks • Introduction to Hash function, Hash algorithm, Password Hashes concepts • Types of Password Cracking 	<ul style="list-style-type: none"> • Demonstration on password attacks, hash functions, countermeasures, and types of password cracking techniques 	08

		<ul style="list-style-type: none"> Cracking countermeasures overview 		
5.	Learners will comprehend the concept of Denial-of-Service attacks and their countermeasures.	<ul style="list-style-type: none"> Overview of Denial-of-Service attacks and their preventive measures. 	<ul style="list-style-type: none"> Demonstrate Denial-of-Service attacks and various countermeasures(video/simulation) 	06
6.	Understanding of Steganography and its steps involved	<ul style="list-style-type: none"> Introduction to Steganography and its various types Overview of information hiding techniques in steganography 	<ul style="list-style-type: none"> Demonstration of information hiding techniques (video/simulation) 	13
			Total Duration in Hours	60

Unit 2: Network and Infrastructure Security

Sn	Learning Outcome	Theory (15 Hours)	Practical (15 Hours)	30
1	Learners will understand network security, identify attacks, analyze CAM tables, and configure switch port security	<ul style="list-style-type: none"> Introduction to network security and relevant security protocols Identification of attacks at Layer 2 and Layer 3 Explanation of CAM table and CAM flooding attacks Overview of switch port security and switch port violations 	<ul style="list-style-type: none"> Hand's on / demonstration on network security protocols, attack simulations, CAM table analysis, and switch port security (video/simulation) 	8
2	Learners will grasp network security controls, technologies, monitoring techniques, and IPsec functionality and architecture	<ul style="list-style-type: none"> Introduction to network security controls and access control measures Overview of firewalls, DMZs, VPNs, IDS, and IPS Concepts of network traffic monitoring and analysis techniques Explanation of IP security functionality and mechanisms Definition of IPSec, security architecture, and its operational modes 	<ul style="list-style-type: none"> Hand's on / demonstration on network security controls, firewall configurations, traffic monitoring, and IPSec implementation. 	10
3	Learners will understand IDS benefits, classify types, and apply practical skills in configuring and analyzing systems	<ul style="list-style-type: none"> Overview of Intrusion Detection Systems (IDS) Classification of Intrusion Detection Systems 	<ul style="list-style-type: none"> Demonstration of activities like configuring IDS, analyzing case studies, and creating comparison charts 	7

4	Learners will apply security operations principles, differentiate SOC and NOC roles, and utilize SIEM tools effectively	<ul style="list-style-type: none"> • Foundations of Security Operations and Management • Understanding Security Operations Center (SOC) and Network Operations Center (NOC) • Introduction to Security Information and Event Management (SIEM) • Integration of SOC, NOC, and SIEM 	<ul style="list-style-type: none"> • Simulations, role-playing, SIEM tool exploration, case studies, and integration projects for practical experience 	5
			Total Duration in Hours	30

6. ORGANISATION OF FIELD VISITS and OJT

Field visits and On-the-Job Training (OJT) provide essential practical exposure for students pursuing a Junior Cyber Security Associate role. These initiatives bridge the gap between theoretical knowledge and real-world application, equipping students with hands-on skills in cyber security tools, techniques, and industry best practices. Annually, at least three field visits and a 4-6 week OJT program during vacations are planned to immerse students in real-time workplace scenarios.

Field Visits:

- Visits to Cyber Security Operation Centers (CSOCs), IT service providers, and data centers.
- Exposure to infrastructure, tools, and real-time threat monitoring processes.

On-the-Job Training (OJT):

- Practical tasks in vulnerability assessment, incident response, and network security monitoring.
- Hands-on experience with firewalls, endpoint protection, and compliance frameworks.

Learning Outcomes:

- Proficiency in using tools, documentation, and reference materials.
- Ability to diagnose and resolve security, network, and hardware issues.
- Development of communication, teamwork, and ethical practices in the workplace.

Health and Safety:

- Emphasis on workplace safety protocols and responsible e-waste disposal. This structured approach ensures that students gain industry-relevant skills, confidence in tackling security challenges, and preparedness for professional certifications.

7. LIST OF EQUIPMENT AND MATERIALS

The list given below is suggestive and an exhaustive list should be prepared by the vocational teacher. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

<ul style="list-style-type: none"> • Whiteboard and Markers • Chart paper and sketch pens • LCD Projector and Laptop for presentations 	<ul style="list-style-type: none"> • PCs/Laptops • Internet with Wi-Fi (Min 2 Mbps Dedicated) • Microphone / voice system for lecture and class activities • Computer Lab with 1:1 PC: trainee ratio and having internet connection, MS Office / Open office, Browser, • Outlook / Any other Email Client, and chat tools • HTML5, Javascript, CSS, SQL, Web Builder, Word Press, Joomla and modelling tools such as Visio, UML • Flash, Photoshop
Classroom Aids Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop	

8. TEACHER'S/TRAINER'S QUALIFICATION

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

Minimum Educational Qualification	Specialization	Age Limit	Industry Experience		Training Experience	
			Years	Specialization	Years	Specialization
Bachelor Degree in Computer Science/ IT OR Certified in relevant CITS course, OR SSC Certified on the said job role with Minimum accepted score is 80%	Web design and development /media design. Good communication skills in English and regional language, Practical skilled to handle and operate tools and equipment with safety	18-37 years (as on January 1 of current year) Age relaxation to be provided as per Govt. rules	2 Year	Web application development	2 Year	Certification in relevant software competencies:

Note – The qualifications for vocational teachers mentioned above is suggestive and not prescriptive. The States/ UTs can make modifications in the qualifications for appointment of vocational teachers/ trainers as per their requirement through a committee appointed by the competent authority in the State/ UT Directorate/ Department of School Education.

Vocational Teachers/Trainers form the backbone of Vocational Education being imparted as an integral part of Rashtriya Madhyamik Shiksha Abhiyan (RMSA). They are directly involved in teaching of 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 Vocational 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 Vocational Teachers/Trainers, Educational Qualifications, Industry Experience, and Certification/Accreditation.

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

1. 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
2. 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 organisations 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 Vocational 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. The Vocational 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 Vocational 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:

1. Written test for the technical/domain specific knowledge related to the sector;
2. Interview for assessing the knowledge, interests and aptitude of trainer through a panel of experts from the field and state representatives; and
3. 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 Vocational 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 Head Master/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, team work, 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.

9. LIST OF CONTRIBUTORS

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