National School Curriculum

INSTRUCTIONAL GUIDE FOR TVET (COMPUTER HARDWARE AND NETWORKING)

CLASSES XI & XII

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Department of Curriculum and Professional Development
Ministry of Education, Royal Government of Bhutan

"Your parents, relatives, and friends would be very proud of what you have achieved. At your age, to have completed your studies is your personal accomplishment. Your knowledge and capabilities are a great asset for the nation. I congratulate you for your achievements. Finally, your capabilities and predisposition towards hard work will invariably shape the future of Bhutan. You must work with integrity, you must keep learning, keep working hard, and you must have the audacity to dream big."

- His Majesty Jigme Khesar Namgyel Wangchuck

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Acknowledgements

Foreword

COVID-19 has suddenly caused unforgiving disruptions in public education all over the world and brought about threats of fragmentation due to disparities in accessibility and connectivity in many systems. In Bhutan too, continuity of education and learning has been severely affected as a result of nationwide school closures and due to restrictions and health protocols. The disruptions have led to challenges in many existing patterns and trends in education resulting in a massive shift away from teaching and learning in traditional settings.

In the new normal education, human interaction and well-being are a priority. Digital technology that enables communication, collaboration and learning across distance, is a source of innovation and expanded potentials. As we embrace this exceptional opportunity to transform the world, and as we reimagine the organization of our educational institutions and learning environments, we need to think about where we want to go.

In the post COVID 19 era, we must prioritize the development of the whole person not just academic knowledge. Inspiration for the change can be drawn from the 1996 Delors report, Learning the treasure within, in its specification of four pillars of learning as "learning to know", "to do", "to be", and "to live together". Therefore, curricula must be increasingly perceived as an integrated and based on themes and problems that allows learners to learn to live in peace with our common humanity and our common planet. This has the potential in the development of a strong base of knowledge about one's self and about the world and find purpose and be better able to participate in social and political milieu.

The National School Curriculum is, not just a mere response to the pandemic, but also a culmination of the curriculum reform work for the last four years by the then Royal Education Council. It is an attempt to transform education from the teaching of "what" to learning of "how" and "why" towards empowering learners with the transversal competencies and the 21st century skills, and preparing them to be lifelong learners. We are optimistic that this move orients our education process towards nurturing nationally rooted and globally competent citizens.

Wish all our learners and teachers a life enriching experiential teaching and learning.
Tashi Delek.

Tashi Namgyal

Director

Introduction

Technical and Vocational Education and Training (TVET) is aimed at providing knowledge and skills for employment. It comprise education, training and skills development related to a wide range of occupational fields, production, services and livelihood. The Department of Curriculum and Professional Development, Ministry of Education envisages that the TVET curriculum has a place in the mainstream education system, as it is the case in most of the education systems of the developed world. The formal Technical and Vocational Education and Training (TVET) began in 1965 at Don Bosco Technical School (DBTS), in Kharbandi (presently known as Rinchending) in Phuntsholing. Even after that, major curriculum reform was planned by the then Department of Curriculum Research and Development (DCRD) in an attempt to make education relevant to the Bhutanese society through diversification of Secondary Education Curriculum in the schools, which included the introduction of TVET.

As per 'National Education Framework' developed collaboratively by the Royal Education Council (REC) and the Ministry of Education (MoE), it provides a pathway on integrating technical/vocational education in the mainstream school education curriculum and as elective subjects in higher classes (NEF, 2009; page 64).

With the collaborative efforts of the Ministry of Labour and Human Resources and the erstwhile Department of Curriculum Research and Development, Vocational Curriculum has been introduced in the schools with assistance from TTIs since 2011. After the first MoU that was signed between MoE and MoLHR in 2011, the second MoU was signed again in 2014, to improve technical/vocational courses. The technical/vocational courses offered by the TTIs/IZCs are adapted and redesigned and are offered in schools aligning to the 'Bhutan Education Blue Print' 2014-2024, which recommends upscaling and diversification of TVET in schools through the provision of alternative pathways in schools and the tertiary education systems, owing to the limited access to such courses, despite the growing demand for technical skills in the country.

The resolutions of the National School Curriculum Conference 2016, also strongly emphasised the need to upscale and deepen TVET. Accordingly, the TVET framework is developed from classes PP to XII, schools equipped with necessary resources and instructors trained. Tripartite MoU among the then REC, MoE and MoLHR was also signed in 2018 to implement the programmes collaboratively.

Although the TVET curriculum is competency based with more emphasis on hands-on experience, further improvements have been made taking care of cognitive and affective domains besides psychomotor. Teaching and learning approaches have also been enriched with the recommendation to use ICT and online resources. Since the pandemic (COVID-19) has resulted in the closure of schools, it has taught us lessons to be prepared for such an untoward situation in the future. Thus, the National School Curriculum Instructional Guide is prepared not only to encourage blended learning but also to facilitate remote learning. The guide would help the schools to implement the curriculum effectively without limiting to contact teaching/learning besides using a variety of pedagogies.

Purpose of the Instructional Guide

Among the many definitions of 'curriculum' this Instructional Guide underscores the meaning of curriculum as a standard and competency-based sequence of planned learning experiences where learners practise and achieve the proficiency in applying the learning experiences in real life scenarios. These proficiencies, in the curriculum framework, have been stated as "competencies" and 'objectives' for each class. In keeping with the principle, 'less is more' as stated the National School Curriculum, the

contents of the curriculum have been reworked, so that learners can be engaged more in activities that can lead to the acquisition of required skills rather than having them 'cover the syllabus'.

This Instructional Guide believes that the classroom teachers, as professional individuals, can make the most authentic and reliable judgment about each learner's learning needs and the learning experiences to be provided to propel the learners in the learning continuum. With these beliefs and principles as the background, the following are the purposes of this document.

- Facilitate learners acquire required skills and competencies.
- Strengthen blended learning, including flipped classroom with multimedia, digital pedagogies and ICT devices and websites as tools to share the responsibility of learning amongst the learners, teachers, the parents and other stakeholders.
- Facilitate the use of Continuous Formative Assessment for learning using diverse appropriate assessment techniques and tools commensurate with individual differences in learning, and gather evidence to guide planning of educational programmes and activities for learners.
- Promote inclusive learning through the blended learning which facilitates learning anywhere, any time with the learner being responsible for the learning.
- Provide suggestive means of acquiring required skills by building interrelationship among, and through, the integration of the four strands of the curriculum.
- Help teachers assume the roles of facilitator, guide, motivator and evaluator.
- Guide teachers, parents and other stakeholders in helping learners achieve their potential.
- Empower teachers to design their own 'course of study' or 'class curriculum' for their students in line with the National School Curriculum Framework.
- Enhance sharing the burden of responsibility and accountability for learning amongst the stakeholders, including the learners themselves.

In this age of advanced communication and information technology, contents are widely available from a number of sources. Therefore, the teachers can select, structure and sequence the contents as required to best suit the learners' need while maintaining coherence and consistency. In other words, while the contents of the curriculum are negotiable, the competencies and objectives are not. While, teachers may have access to number of materials, it should be kept in mind that the teaching and learning should be focused on achieving the competencies rather than 'covering of the syllabus'. The teaching learning materials should be used as means to create a learning environment that is competency-based where the learners need to master the skills presented to them. While designing lesson plans and teaching learning activities, teachers need to ensure that the materials are relevant and appropriate for the given task.

The assessment should be competency-based wherein the teachers should assess the learners' mastery of the skills stated as competencies and objectives for each class. Teachers should use appropriate assessment tools and techniques depending on the nature of the learning activities. The learners should be clearly informed about the success criteria, the areas of assessment and the tools to be used so that they know exactly what tasks are to be performed or expected of them. In the process of the performance, the teacher should continuously provide feedback and, if necessary, modify instructions. Efforts have to be made to ensure that every learner has mastered the skills.

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Class XI

MODULE 2: Performing troubleshooting of computer system and devices

Chapter 1: Diagnosing faults of computer system and device

A. Competency/Competencies:

i.   Attend the customer complaint and keep records.

B. Learning objectives/Topic:

Learning objectives	Topic
1.1.1. Estimate the costing **1.1.2.** Prepare forms **1.1.3.** State the technique to attend customer complaints and feedback **1.1.4.** Keep records of documents	1.1 Attending customer complaint **Overview:** The topic enables the learners gain knowledge and skills on attending customer complaint.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 1.1
- ✓ Demonstrate OPERATION SHEET 1.1
- ✓ Let the learners perform OPERATION SHEET 1.1
- ✓ Let the learners solve SAMPLE SELF CHECK 1.1
- ✓ Give additional questions.
- ✓ Let the learners read INFORMATION SHEET 1.1
- ✓ Provide hand-outs.
- ✓ Share the web links, let the learners watch the video and make notes of it and submit it through Google Classroom.
- ✓ Let the learners solve SAMPLE SELF CHECK 1.1

D. Assessment

- ✓ Assess the learners' notes submitted to check their understanding.
- ✓ Assess the learner's performance on OPERATION SHEET 1.1
- ✓ Assess the learner's response to SAMPLE SELF CHECK 1.1
- ✓ Assess the learner's answer posted in the Google Classroom/social media.
- ✓ Assess the learner's response to SAMPLE SELF CHECK 1.1
- ✓ Assess the learner through answers posted in the Google Classroom and provide necessary feedback.

E. Resources:

- ✓ Competency-Based Learning Materials

✓ Handouts

A. Competency/Competencies:

   i.   Check the software compatibility as and when it is required.

B. Learning objectives/Topic:

Learning objectives	Topic
1.2.1. Define software compatibility, web browser and Uniform Resource Locators (URL) 1.2.2. State the methods to check software compatibility 1.2.3. Use Internet 1.2.4. Ensure to browse safe websites 1.2.5. Be patient while checking software compatibility	1.2 Testing software compatibility **Overview:** The topic enables the learners gain knowledge and skills on testing software compatibility.

C. Learning Experiences:

✓ Let the learners read INFORMATION SHEET 1.2
✓ Demonstrate OPERATION SHEET 1.2
✓ Let the learners perform OPERATION SHEET 1.2
✓ Let the learners solve SAMPLE SELF CHECK 1.2
✓ Let the learners read INFORMATION SHEET 1.2
✓ Provide handouts.
✓ Let the learners watch the video, make notes on the step to replace the inverter and submit it in Google Classroom.
✓ Let learners explore the internet to look for information on common screen error and take note of it and submit it in Google Classroom.
✓ Let the learners solve SAMPLE SELF CHECK 1.2
✓

D. Assessment:

✓ Assess the learner's performance on OPERATION SHEET 1.2
✓ Assess the learner's response to SAMPLE SELF CHECK 1.2
✓ Assess the learner through a note posted in the Google Classroom and provide necessary feedback.

E. Resources:

✓ CBLM
✓ Handouts
✓ https://www.youtube.com/watch?v=uM7LfeZjUng (Testing software compatibility.)

A. Competency/Competencies:

    i.   Check system component voltage when the system restarts frequently, gets heated up, and/or loses power abruptly.

B. Learning objectives/Topic:

Learning objectives	Topic
1.3.1 Define the hardware compatibility 1.3.2 State the purpose for updating software 1.3.3 State the methods of updating software 1.3.4 Identify the software compatibility 1.3.5 Define the hardware compatibility 1.3.6 State the purpose of testing 1.3.7 State the methods to test hardware compatibility 1.3.8 Interpret manual 1.3.9 Browse Control Panel 1.3.10 Be patient while updating software	1.3 Checking system component voltage **Overview:** The topic enables the learners gain knowledge and skills on checking system components voltage.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 1.3
- ✓ Demonstrate OPERATION SHEET 1.3
- ✓ Let the learners perform OPERATION SHEET 1.3
- ✓ Let the learners solve SAMPLE SELF CHECK 1.3
- ✓ Let the learners read INFORMATION SHEET 1.3
- ✓ Provide handouts.
- ✓ Share the weblinks:
- ✓ Let the learners make a note of how the power supply unit of a computer is tested using a multi-meter.
- ✓ Let the learners solve SAMPLE SELF CHECK 1.3
- ✓ Conduct a live question-answer session with students through Google Classroom or social media.

D. Assessment:

- ✓ Assess the learner's performance on OPERATION SHEET 1.3
- ✓ Assess the learner's response to SAMPLE SELF CHECK 1.3
- ✓ Assess the learners through a note posted in the Google Classroom using the rubric and provide necessary feedback.
- ✓ Assess the learners through question-answer session conducted through Google Classroom and social media using the rubric.

E. Resources:

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=SECWePatYjY(Explanation on how to use multi-meter.)
- ✓ https://www.youtube.com/watch?v=Tr70VyoACPg(Explanation on how to measure the voltage of the power supply unit of a computer.)

A. Competency/Competencies:

   i.   Perform system scan using correct process.

B. Learning objectives/Topic:

Learning objectives	Topic
1.4.1 Define virus and anti-virus 1.4.2 List the type of anti-viruses 1.4.3 List the types of scans 1.4.4 State the purpose of scanning 1.4.5 Ensure to use genuine antivirus software.	1.4 Performing system scan **Overview:** The topic enables the learners gain knowledge and skills on performing system scan.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 1.4
- ✓ Let the learners explore information on ways to troubleshoot the computer system and device.
- ✓ Demonstrate OPERATION SHEET 1.4
- ✓ Let the learners perform OPERATION SHEET 1.4
- ✓ Let the learners solve SAMPLE SELF CHECK 1.4
- ✓ Provide additional questions.
- ✓ Let the learners read INFORMATION SHEET 1.4
- ✓ Provide handouts.
- ✓ Let the learners explore the information to determine the factor affecting the cost of repair.
- ✓ Make note of it and submit it through Google Classroom/social media.
- ✓ Let the learners explore the information on the price for every component of computer and laptop. Make note of it and submit it through Google Classroom/social media
- ✓ Let the learners estimate the cost of repair for a computer.
- ✓ Let the learners solve SAMPLE SELF CHECK 1.4

D. Assessment:

- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.4
- ✓ Assess the learners' conceptual understanding base on the answers submitted in the Google Classroom/social media.

✓ Assess the learners through a note posted and estimated the cost of repair for a computer in the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

✓ CBLM
✓ https://www.youtube.com/watch?v=Cnsc9iRQxEE (Performing system scan)
✓ Handouts

A. Competency/Competencies:

i. *Defragment the Hard Disk Drive (HDD)*

B. Learning objectives/Topic:

Learning objectives	Topic
1.5.1. Define defragment *1.5.2.* State purpose of defragmentation *1.5.3.* State the methods of defragmentation *1.5.4.* Configure the time of schedule Ensure proper handling of materials and equipment	1.5 Defragmenting Hard Disk Drive (HDD) **Overview:** The topic enables the learners gain knowledge and skills on defragmenting the Hard Disk Drive (HDD).

C. Learning Experiences:

✓ Let the learners read INFORMATION SHEET 1.5
✓ Demonstrate OPERATION SHEET 1.5
✓ Let the learners perform OPERATION SHEET 1.5
✓ Let the learners solve SAMPLE SELF CHECK 1.5
✓ Provide additional questions
✓ Let the learners read INFORMATION SHEET 1.5
✓ Provide handouts.
✓ Let the learners explore information from the internet to carry out the task.
✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and them estimate the cost for carrying out the task.
✓ Let the learners solve SAMPLE SELF CHECK 1.5

D. Assessment:

✓ Assess the learners' performance on OPERATION SHEET 1.5.
✓ Assess the learners' response to SAMPLE SELF CHECK 1.5.
✓ Assess the learners based on answers posted in the Google Classroom/social media
✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=teHneX6Fduc (Defragmenting Hard Disk Drive)

A. Competency/Competencies:

i. Perform continuity test.

B. Learning objectives/Topic:

Learning objectives	Topic
1.6.1 Define continuity test *1.6.2* State the purpose of testing *1.6.3* List the types of multimeters *1.6.4* Use multimeter *1.6.5* Ensure proper handling of tools and materials *1.6.6* Ensure to connect the jacks firmly and securely 1.6.7 Ensure to use right probe in right terminal	**1.6 Performing continuity test** **Overview:** The topic enables the learners gain knowledge and skills on performing continuity test.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 1.5
- ✓ Demonstrate OPERATION SHEET 1.5
- ✓ Let the learners perform OPERATION SHEET 1.5
- ✓ Let the learners solve SAMPLE SELF CHECK 1.5
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 1.5
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 1.5

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 1.5.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.5.
- ✓ Assess the learners based on answers posted in the Google Classroom/social media.
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

✓ CBLM

✓ https://www.youtube.com/watch?v=iIQ14vTxVK0 (Performing continuity test)

A. Competency/Competencies:

    i. Diagnose the boot error.

B. Learning objectives/Topic:

Learning objectives	Topic
1.7.1 Define boot error 1.7.2 List the types of boot errors 1.7.3 Explain the causes and remedies of boot errors 1.7.4 Ensure proper handling of tools and materials 1.7.5 Ensure to use ESD wrist band	1.7 Diagnosing boot error **Overview:** The topic enables the learners gain knowledge and skills on diagnosing the boot error.

C. Learning Experiences:

✓ Let the learners read INFORMATION SHEET 1.7

✓ Demonstrate OPERATION SHEET 1.7

✓ Let the learners perform OPERATION SHEET 1.7

✓ Let the learners solve SAMPLE SELF CHECK 1.7

✓ Provide additional questions

✓ Let the learners read INFORMATION SHEET 1.7

✓ Provide handouts.

✓ Let the learners explore information from the internet to carry out the task.

✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.

✓ Let the learners solve SAMPLE SELF CHECK 1.7

D. Assessment:

✓ Assess the learners' performance on OPERATION SHEET 1.7.

✓ Assess the learners' response to SAMPLE SELF CHECK 1.7

✓ Assess the learners based on answers posted in the Google Classroom/social media

✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

✓ CBLM

✓ https://www.youtube.com/watch?v=bgwpeOx2fvQ (Diagnosing boot error)

A. Competency/Competencies:

    i. Diagnose the frequent auto restart properly.

B. Learning objectives/Topic:

Learning objectives	Topic
1.8.1 Define boot error 1.8.2 List the types of boot errors 1.8.3 Explain the causes and remedies of boot errors 1.8.4 Ensure proper handling of tools and materials 1.8.5 Ensure to use ESD wrist band	1.8 Diagnosing frequent auto restart **Overview:** The topic enables the learners gain knowledge and skills on diagnosing frequent auto restart.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 1.8
- ✓ Demonstrate OPERATION SHEET 1.8
- ✓ Let the learners perform OPERATION SHEET 1.8
- ✓ Let the learners solve SAMPLE SELF CHECK 1.8
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 1.8
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 1.8

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 1.8.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.8
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=jNGjTboFlog   (Diagnosing frequent auto restart)

A. Competency/Competencies:

i.   Diagnose the Blue Screen of Death (BSOD) when the screen is error.

B. Learning objectives/Topic:

Learning objectives	Topic
1.9.1 Define Blue Screen of death (BSOD) *1.9.2* State the causes and effect of BSOD *1.9.3* State the methods to diagnose BSOD *1.9.4* Ensure to use appropriate use of PPE 1.9.5 Ensure to follow the OHS rules and regulations	1.9 Diagnosing Blue Screen of Death (BSOD**)** **Overview:** The topic enables the learners gain knowledge and skills on diagnosing the Blue Screen of Death (BSOD).

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 1.9
- ✓ Demonstrate OPERATION SHEET 1.9
- ✓ Let the learners perform OPERATION SHEET 1.9
- ✓ Let the learners solve SAMPLE SELF CHECK 1.9
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 1.9
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 1.9

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 1.9
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.9
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=qz-ro8rMzy8 (Installing Hard Disk Drive (HDD)

A. **Competencies:**
   i. Check screen error.
B. **Learning objectives/Topic:**

Learning objectives	Topic
1.10.1 List the types of screens 1.10.2 State the causes screen errors *1.10.3* State the methods of checking screen error *1.10.4* Ensure to use ESD wristband while checking screen 1.10.5 Ensure proper handling of tools and materials	1.10 Checking screen error **Overview:** The topic enables the learners gain knowledge and skills on checking screen error**.**

C. **Learning Experiences:**

   ✓ Let the learners read INFORMATION SHEET 1.10
   ✓ Demonstrate OPERATION SHEET 1.10
   ✓ Let the learners perform OPERATION SHEET 1.10
   ✓ Let the learners solve SAMPLE SELF CHECK 1.10
   ✓ Provide additional questions
   ✓ Let the learners read INFORMATION SHEET 1.10
   ✓ Provide handouts.
   ✓ Let the learners explore information from the internet to carry out the task.
   ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
   ✓ Let the learners solve SAMPLE SELF CHECK 1.10

D. **Assessment:**

   ✓ Assess the learners' performance on OPERATION SHEET 1.10
   ✓ Assess the learners' response to SAMPLE SELF CHECK 1.10
   ✓ Assess the learners based on answers posted in the Google Classroom/social media
   ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. **Resources:**

   ✓ CBLM
   ✓ https://www.youtube.com/watch?v=f2kcJH8ASN8 (Diagnosing the Blue Screen of Death (BSOD)

A. **Competencies:**

    i. Troubleshoot the window with inbuilt tools.

B. **Learning objectives/Topic:**

Learning objectives	Topic
1.11.1 Define troubleshooting 1.11.2 State purpose of performing troubleshooting 1.11.3 State types of troubleshooting 1.11.4 Ensure to use appropriate use of PPE 1.11.5 Ensure to follow the OHS rules and regulations	1.11 Troubleshooting window with inbuilt tools **Overview:** The topic enables the learners gain knowledge and skills on troubleshooting window with inbuilt tools.

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 1.11
- ✓ Demonstrate OPERATION SHEET 1.11
- ✓ Let the learners perform OPERATION SHEET 1.11
- ✓ Let the learners solve SAMPLE SELF CHECK 1.11
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 1.11
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 1.11

D. **Assessment:**

- ✓ Assess the learners' performance on OPERATION SHEET 1.11
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.11
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. **Resources:**

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=-gInk9AhnFI (Troubleshooting window with inbuilt tools)

A. **Competencies:**
 i. Check cable resistance.
B. Learning objectives/Topic:

Learning objectives	Topic
1.12.1 Define cable resistance 1.12.2 State the concept of open and closed circuit 1.12.3 State the purpose of checking the resistance 1.12.4 Use multi-meter 1.12.5 Ensure appropriate use of PPE 1.12.6 Ensure to follow OHS rules and regulations 1.12.7 *Ensure correct placement of probs in terminals*	1.12 Checking cable resistance **Overview:** The topic enables the learners gain knowledge and skills on checking cable resistance.

C. **Learning Experiences:**

 ✓ Let the learners read INFORMATION SHEET 1.12
 ✓ Demonstrate OPERATION SHEET 1.12
 ✓ Let the learners perform OPERATION SHEET 1.12
 ✓ Let the learners solve SAMPLE SELF CHECK 1.12
 ✓ Provide additional questions
 ✓ Let the learners read INFORMATION SHEET 1.12
 ✓ Provide handouts.
 ✓ Let the learners explore information from the internet to carry out the task.
 ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
 ✓ Let the learners solve SAMPLE SELF CHECK 1.12

D. Assessment:

 ✓ Assess the learners' performance on OPERATION SHEET 1.12
 ✓ Assess the learners' response to SAMPLE SELF CHECK 1.12
 ✓ Assess the learners based on answers posted in the Google Classroom/social media
 ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

 ✓ CBLM
 ✓ https://www.youtube.com/watch?v=zJ9wPPnkqGk (Checking cable resistance)

A. **Competencies:**
  i.   Test hardware compatibility

B.   Learning objectives/Topic:

Learning objectives	Topic
1.13.1 Define hardware compatibility 1.13.2 List the types of hardware compatibility 1.13.3 State the methods to check software compatibility 1.13.4 Ensure to use Electrostatic discharge (ESD) tools 1.13.5 Ensure proper handling of tools and materials	1.13 Testing hardware compatibility **Overview:** The topic enables the learners gain knowledge and skills on testing hardware compatibility.

C.   Learning Experiences:

  ✓ Let the learners read INFORMATION SHEET 1.13
  ✓ Demonstrate OPERATION SHEET 1.13
  ✓ Let the learners perform OPERATION SHEET 1.13
  ✓ Let the learners solve SAMPLE SELF CHECK 1.13
  ✓ Provide additional questions
  ✓ Let the learners read INFORMATION SHEET 1.13
  ✓ Provide handouts.
  ✓ Let the learners explore information from the internet to carry out the task.
  ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
  ✓ Let the learners solve SAMPLE SELF CHECK 1.13

D. **Assessment:**

  ✓ Assess the learners' performance on OPERATION SHEET 1.13
  ✓ Assess the learners' response to SAMPLE SELF CHECK 1.13
  ✓ Assess the learners based on answers posted in the Google Classroom/social media
  ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E.   Resources:

  ✓ CBLM
  ✓ https://www.youtube.com/watch?v=uM7LfeZjUng&t=10s (Testing hardware compatibility)

A. **Competencies:**
   i. Check network adapter
B. **Learning objectives/Topic:**

Learning objectives	Topic
1.14.1 Define network adapter *1.14.2* State the types of network adapter *1.14.3* State the functions of network adapter *1.14.4* Ensure appropriate use of PPE 1.14.5 Ensure to follow OHS rules and regulations	1.14 Checking network adapter **Overview:** The topic enables the learners gain knowledge and skills on checking the network adapter.

C. **Learning Experiences:**

   ✓ Let the learners read INFORMATION SHEET 1.14
   ✓ Demonstrate OPERATION SHEET 1.14
   ✓ Let the learners perform OPERATION SHEET 1.14
   ✓ Let the learners solve SAMPLE SELF CHECK 1.14
   ✓ Provide additional questions
   ✓ Let the learners read INFORMATION SHEET 1.14
   ✓ Provide handouts.
   ✓ Let the learners explore information from the internet to carry out the task.
   ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
   ✓ Let the learners solve SAMPLE SELF CHECK *1.14*

D. **Assessment:**

   ✓ Assess the learners' performance on OPERATION SHEET 1.14
   ✓ Assess the learners' response to SAMPLE SELF CHECK 1.14
   ✓ Assess the learners based on answers posted in the Google Classroom/social media
   ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. **Resources:**

   ✓ CBLM
   ✓ https://www.youtube.com/watch?v=-BJT-pUTN3s (Checking network adapter)

Chapter 2: Rectifying software faults

A. Competency/Competencies:

    i.   Install software update when computer slows down or software malfunction.

B. Learning objectives/Topic:

Learning objectives	Topic
2.1.1. Define software 2.1.2. List the types of software 2.1.3. Explain the importance of software updating 2.1.4. Explain methods of updating	2.1 Installing software updates **Overview** The topic enables the learners gain knowledge and skills on installing software updates.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 2.1
- ✓ Demonstrate OPERATION SHEET 2.1
- ✓ Let the learners perform OPERATION SHEET 2.1
- ✓ Let the learners solve SAMPLE SELF CHECK 2.1
- ✓ Provide questions.
- ✓ Let the learners read INFORMATION SHEET 2.1
- ✓ Let the learners explore the internet to look for information on types of software and take note of it.
- ✓ let learners make a note on how to update your computer using CMD.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.1

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 2.1.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.1.
- ✓ Assess the learners based on the answer submitted through Google Classroom/social media.
- ✓ Assess the learner's notes uploaded in the Google Classroom/social media to assess the learner's conceptual understanding of installing software updates and provide intervention accordingly.

E. Resources (online and offline):

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=7iRAwq6YTqs (Explanation on how to install software update directly from setting.)

A. Competency/Competencies:

i. Repair software when application software malfunctions.

B. Learning objectives/Topic:

Learning objectives	Topic
2.2.1 Explain the purpose of repairing 2.2.2 Ensure to be patient while repairing software	2.2 Repairing software (Application Software) **Overview** The topic enables the learners gain knowledge and skills on repairing software.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 2.2
- ✓ Demonstrate OPERATION SHEET 2.2
- ✓ Let the learners perform OPERATION SHEET 2.2
- ✓ Let the learners solve SAMPLE SELF CHECK 2.2
- ✓ Let learners read information sheet 2.2.
- ✓ Learners will be given a topic each from information sheet 2.2 of CBLM to do research.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.2

D. Assessment:

- ✓ Assess the learner's performance on OPERATION SHEET 2.2
- ✓ Assess the learner's notes gathered from the video using rubrics.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.2
- ✓ Assess learners' conceptual understanding of repairing software based on conducting the quiz.
- ✓ Assess the learner's work uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.

E. Resources:

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=w05x17k2fr0 (Explanation on how to repair, uninstall and install software using a control panel.)

A. Competency/Competencies:

    i. Upgrade software when a software compatibility issue occurs and new features are introduced.

B. Learning objectives/Topic:

	Learning objectives	Topic
2.3.1	State purpose of upgrading	**2.3 Upgrading software**
2.3.2	Determine software versions	Overview The topic enables the learners
2.3.3	State the importance of checking compatibility	gain knowledge and skills on upgrading
2.3.4	Differentiate between upgrade and updating of software	software.
2.3.5	Ensure to install software in a primary partition	

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 2.3
- ✓ Demonstrate OPERATION SHEET 2.3
- ✓ Let the learners perform OPERATION SHEET 2.3.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.3.
- ✓ Let the learners read INFORMATION SHEET 2.3
- ✓ Let the learners solve SAMPLE SELF CHECK 2.3.
- ✓ Provide additional questions.

D. Assessment:

- ✓ Assess the learner's performance on OPERATION SHEET 2.3
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.3
- ✓ Assess learners' conceptual understanding of repairing software based on conducting the quiz.
- ✓ Assess the learner's notes gathered from the video using rubrics.
- ✓ Assess the learners based on answers posted in Google Classroom/social media using the rubric.

E. Resources:

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=QJnDFv5MBb0(Explanation on how to upgrade your operating system to the latest version.)

A. Competency/Competencies:

    i. Rectify BSOD error when the blue screen appears.

B. Learning objectives/Topic:

Learning objectives	Topic
2.4.1. Explain the causes and remedies of BSOD errors 2.4.2. State the purpose of system restore and safe mode 2.4.3. Ensure to wear ESD wristband 2.4.4. Ensure to backup important files 2.4.5. Be patient while rectifying BSOD error	2.4 Rectifying BSOD error/boot error **Overview***:* The topic enables the learners gain knowledge and skills on rectifying BSOD error/boot error.

C. Learning Experiences:

✓ Let the learners read INFORMATION SHEET 2.4.

✓ Let the learners be in a group and divide the topic each of INFORMATION SHEET 2.4.

✓ Let learners explore the internet to look for information on the cause of BSOD error and purpose of system restore and safe mode and then present the information to the class.

✓ Demonstrate OPERATION SHEET 2.4

✓ Let the learners perform OPERATION SHEET 2.4.

✓ Let the learners solve SAMPLE SELF CHECK 2.4

✓ Let the learners read INFORMATION SHEET 2.4.

✓ Provide handout to learners through Google Classroom/social media.

✓ Let the learners solve SAMPLE SELF CHECK 2.4

✓ Provide additional questions.

D. Assessment:

✓ Assess the learner's performance on OPERATION SHEET 2.4

✓ Assess the learners based on the presentation using the rubric

✓ Assess the learners' response to SAMPLE SELF CHECK 2.4

✓ Conduct class tests to observe the learner's conceptual understanding ofthe cause of BSOD error.

✓ Assess the learner's notes uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.

✓ Assess the learner's answers posted in the Google Classroom using the rubric.

E. Resources:

✓ CBLM

✓ Handouts

✓ https://www.youtube.com/watch?v=_dDOqQOn37A (Explanation on rectifying BSOD error)

A. Competency/Competencies:

    i. Repair operating system when operating system files is/are corrupted and/or missing and displays error messages

B. Learning objectives/Topic:

	Learning objectives	Topic
2.5.1 2.5.2 2.5.3	Explain causes and remedies of corrupted files in OS Navigate boot priority Ensure to repair with correct OS version	**2.5 Repairing OS** Overview: The topic enables the learners gain knowledge and skills on repairing OS.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 2.5.
- ✓ Demonstrate SKILL SHEET and OPERATION SHEET 2.5
- ✓ Let the learners perform SKILL SHEET 2.5.
- ✓ Let the learners perform OPERATION SHEET 2.5.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.5
- ✓ Let the learners read INFORMATION SHEET 2.4.
- ✓ Provide handout to learners through Google Classroom/social media.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.4.

D. Assessment:

- ✓ Assess learners while they perform skill sheet 2.5 using the rubric.
- ✓ Assess the learner's performance on OPERATION SHEET 2.5
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.5
- ✓ Assess the learner's notes gathered from the video using rubrics.

E. Resources:

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=mtDXOTbpNSo (Explanation on repairing OS)

Chapter 3: Rectifying PC components (Laptop/Palmtop)

A. Competencies:
i.   Provide service cooling service any time.

B. Learning objectives/Topic:

Learning objectives	Topic
3.1.1 Explain the types of cooling mechanism 3.1.2 Identify area/components for application of spray 3.1.3 State the function of the CPU fan, GPU and heat sink 3.1.4 Ensure safe handling of tools and materials 3.1.5 Ensure not to apply spray on delicate components 3.1.6 Ensure not to apply excessive thermal paste on CPU	3.1 Servicing cooling mechanism **Overview:** The topic enables the learners gain knowledge and skills on service cooling mechanism.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 3.1
- ✓ Demonstrate OPERATION SHEET 3.1
- ✓ Let the learners perform OPERATION SHEET 3.1
- ✓ Let the learners solve SAMPLE SELF CHECK 3.1
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 3.1
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 3.1

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 3.1
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.1
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=MGqJa20Lqwc   (Service cooling mechanism)

A. Competency/Competencies:

    i.   Repair SMPS when computer malfunction due to power supply-related issues.

B. Learning objectives/Topic:

Learning objectives	Topic

3.2.1   Define SMPS
3.2.2   Define soldering iron
3.2.3   Explain the function of SMPS
3.2.4   List the types of SMPS
3.2.5   List components of SMPS
3.2.6   Explain the concept of voltage
3.2.7   State the purpose of checking voltage
3.2.8   List the basic electronic components
    ✓ Capacitor
    ✓ Resistor
    ✓ Diode
3.2.9   Determine the value of resistor using colour-coding chart
3.2.10 Use soldering iron
3.2.11 Interpret the resistor colour coding chart
3.2.12 Ensure not to touch the tip of soldering iron
3.2.13 Ensure to return the soldering iron to its stand
        Be patient while repairing SMPS
	3.2 Servicing Switched Mode Power Supply (SMPS)
	Overview: The topic enables the learners gain knowledge and skills on Service Switched Mode Power Supply (SMPS).

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 3.2
- ✓ Demonstrate OPERATION SHEET 3.2
- ✓ Let the learners perform OPERATION SHEET 3.2
- ✓ Let the learners solve SAMPLE SELF CHECK 3.2
- ✓ Let the learners read INFORMATION 3.2
- ✓ Provide handout to learners through Google Classroom/social media.
- ✓ Let learners explore and make a note on how to restore faulty SMPS and submit through google.
- ✓ Let the learners solve SAMPLE SELF CHECK 3.2
- ✓ Provide additional questions.

D. **Assessment:**

- ✓ Assess the learners' performance referring to SKILL SHEET 3.2 and OPERATION SHEET 3.2
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.2
- ✓ Assess learners by conducting the class test.
- ✓ Assess the learner's note uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.
- ✓ Assess the learner's answers posted in the Google Classroom/social media using the rubric.

E. **Resources: soldering iron**

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=cK5WLMFSGnw (Service Switched Mode Power Supply (SMPS)

Class XII
Chapter 3: Rectifying PC components faults

A. Competency/Competencies:

   i. Replace screen when the screen has display error due to hardware failure.

B. Learning objectives/Topic:

Learning objectives	Topic
3.3.1 State the component of laptop 3.3.2 List types of screens and its specification 3.3.3 State the causes of screen failure 3.3.4 Use Screen Replacement Tool Kit 3.3.5 Ensure proper disposal of waste 3.3.6 Ensure to replace the screen with the same specification	3.4 Replacing laptop screen **Overview:** The topic enables the learners gain knowledge and skills on replacing laptop screen

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 3.3
- ✓ Let learners be in a group and give a topic to each group.
- ✓ Explore the internet to look for the information and present it to the class.
- ✓ Demonstrate OPERATION SHEET 3.3
- ✓ Let the learners perform OPERATION 3.3
- ✓ Let the learners solve SAMPLE SELF CHECK 3.3
- ✓ Let the learners read INFORMATION SHEET 3.3
- ✓ Provide handout to learners through Google Classroom/social media.
- ✓ Let learners explore information on different types of laptop/computer screens and make note of it.
- ✓ Let the learners solve SAMPLE SELF CHECK 3.3
- ✓ Provide questions.

D. Assessment:

- ✓ Assess learners while performing operation sheet 3.3using the rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.3
- ✓ Assess the learners while doing a presentation using the rubric.
- ✓ Assess the learner's notes gathered based on the information obtained from the web link or relevant materials.
- ✓ Assess the learner's answers posted in the Google Classroom/social media using the rubric.

E. Resources:

- ✓ CBLM
- ✓ Handouts

✓ https://www.youtube.com/watch?v=lnhgu6iWoa8 (Explanation on replacing computer screen)

A. Competency/Competencies:
  i. Perfectly replace the mother board when it is damaged.
B. Learning objectives/Topic:

Learning objectives	Topic
3.5.1 Explain motherboard compatibility 3.5.2 State the causes of motherboard failure 3.5.3 Ensure proper disposal of used motherboard 3.5.4 Ensure to check the compatibility of the motherboard before replacing	**3.5 Replacing mother board** **Overview:** The topic enables the learners gain knowledge and skills on replacing mother board.

C. Learning Experiences:

✓ Let the learners read INFORMATION SHEET 3.5
✓ Demonstrate OPERATION SHEET 3.5
✓ Let the learners perform OPERATION SHEET 3.5
✓ Let the learners solve SAMPLE SELF CHECK 3.5
✓ Provide additional questions
✓ Let the learners read INFORMATION SHEET 3.5
✓ Provide handouts.
✓ Let the learners explore information from the internet to carry out the task.
✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
✓ Let the learners solve SAMPLE SELF CHECK 3.5

D. Assessment:

✓ Assess the learners' performance on OPERATION SHEET 3.5.
✓ Assess the learners' response to SAMPLE SELF CHECK 3.5.
✓ Assess the learners based on answers posted in the Google Classroom/social media
✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

✓ CBLM
✓ https://www.youtube.com/watch?v=iNw1vGyCPZs (Replacing mother board)

A. **Competency/Competencies:**

    i.   Replace speakers when there is no audio output or need to enhance audio.

B. **Learning objectives/Topic:**

Learning objectives	Topic
3.6.1 Classify types of speakers and its specification 3.6.2 State the causes of speaker failure	3.6. Replacing laptop speaker **Overview:** The topic enables the learners gain knowledge and skills on replacing laptop speaker.

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 3.6
- ✓ Demonstrate OPERATION SHEET 3.6
- ✓ Let the learners perform OPERATION SHEET 3.6
- ✓ Let the learners solve SAMPLE SELF CHECK 3.6
- ✓ Let the learners read INFORMATION SHEET 3.6
- ✓ Provide handout to learners through Google Classroom/social media.
- ✓ Let the learners solve SAMPLE SELF CHECK 3.6

D. **Assessment:**

- ✓ Assess learners while performing OPERATION SHEET 3.6 using the rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.6 Conduct a quiz to assess their understanding of replacing speakers using the rubric.
- ✓ Assess the learner's note uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.

E. **Resources:**

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=w_QGruJuH7E (Explanation on replacing laptop speaker)

A. **Competencies:**

    i.   Replace keyboard when keyboard cannot be repaired by simple hardware and software troubleshooting

B. **Learning objectives/Topic:**

Learning objectives	Topic
3.7.1 State the specifications of keyboard *3.7.2* State the methods of replacing a keyboard *3.7.3* State the causes of keyboard damages *3.7.4* Ensure not to pull keyboard without disconnecting the cable *3.7.5* Ensure the keyboard is screwed or locked properly Ensure proper handling of tools and equipment	3.7 Replacing keyboard Overview: The topic enables the learners gain knowledge and skills on replacing keyboard.

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 3.7
- ✓ Demonstrate OPERATION SHEET 3.7
- ✓ Let the learners perform OPERATION SHEET 3.7.
- ✓ Let the learners solve SAMPLE SELF CHECK 3.7
- ✓ Let the learners read INFORMATION SHEET 3.7
- ✓ Provide handout to learners through Google Classroom/social media.
- ✓ Provide the weblink:
- ✓ Let the learners solve SAMPLE SELF CHECK 3.7

D. **Assessment:**

- ✓ Assess learners while performing OPERATION SHEET 3.7 using the rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.7.
- ✓ Conduct class test to assess learners conceptual understanding on
- ✓ Assess the learner's notes uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.

E. **Resources:**

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=GUzBWFqTKwM (Explanation on replacing laptop keyboard)

A. **Competency/Competencies:**
- i. Replace touchpad when there is touchpad sensor errors/damage.

B. Learning objectives/Topic:

Learning objectives	Topic
3.8.1 State the specifications of touchpad connectors 3.8.2 State the causes of touchpad failure 3.8.3 Ensure not to pull touchpad without disconnecting the cable 3.8.4 Ensure to align touchpad with base	**3.8 Replacing touchpad** Overview: The topic enables the learners gain knowledge and skills to replace touchpad.

C. Learning Expperiences:

- ✓ Let the learners read INFORMATION SHEET 3.8.
- ✓ Demonstrate OPERATION SHEET 3.8
- ✓ Let the learners perform OPERATION SHEET 3.8
- ✓ Let the learners solve SAMPLE SELF CHECK 3.8
- ✓ Let the learners read INFORMATION SHEET 3.8
- ✓ Let the learners solve SAMPLE SELF CHECK 3.8.
- ✓ Provide handout to learners through Google Classroom/social media.
- ✓ Let the learners solve SAMPLE SELF CHECK 3.8.

D. Assessment:

- ✓ Assess learners while performing OPERATION SHEET 3.8using the rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.8
- ✓ Conduct class test to assess their conceptual understanding on replacing touchpad
- ✓ Assess the learner's note uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.
- ✓ Conduct online tests through social media/Google Classroom.

E. Resources:

- ✓ CBLM
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=hDASLGm0TZw (Explanation on replacing laptop touchpad)

Chapter 4: Rectifying peripheral device faults

A. Competency/Competencies:
- i. Carry out any kind of maintenance work when the printer is damage

B. Learning objectives/Topic:

Learning objectives	Topic
4.1.1 Explain the importance of removing protected plastic 4.1.2 Explain the common printer error 4.1.3 Insert cartridge 4.1.4 Remove Jammed paper 4.1.5 Ensure no paper fragment are left inside 4.1.6 Ensure proper handling of equipment and materials 4.1.7 Ensure no paper fragment are left inside 4.1.8 Ensure proper disposal of used cartridge	4.1 Servicing printer **Overview:** The topic enables the learners gain knowledge and skills to service printer.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 4.1
- ✓ Demonstrate OPERATION SHEET 4.1
- ✓ Let the learners perform OPERATION 4.1
- ✓ Let the learners solve SAMPLE SELF CHECK 4.1
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 4.1
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 4.1

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 4.1
- ✓ Assess the learners' response to SAMPLE SELF CHECK 4.1
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=SMem_pl8044 (Servicing printer)

A. Competency/Competencies:

   i. Carry out any kind of maintenance work required.

B. Learning objectives/Topic:

Learning objectives	Topic
4.2.1 Categorise types of photocopy machine and specification *4.2.2* Explain the common photocopy machine error *4.2.3* Ensure no paper fragments are left behind *4.2.4* Ensure cartridge is inserted *4.2.5* Ensure to use PPE 4.2.6 Ensure to avoid touching any metallic surface in the fuser area	4.2 Servicing photocopy machine **Overview:** The topic enables the learners gain knowledge and skills to service photocopy machine

C. Learning Experiences:

   ✓ Let the learners read INFORMATION SHEET 4.2
   ✓ Demonstrate OPERATION SHEET 4.2
   ✓ Let the learners perform OPERATION 4.2
   ✓ Let the learners solve SAMPLE SELF CHECK 4.2
   ✓ Provide additional questions
   ✓ Let the learners read INFORMATION SHEET 4.2
   ✓ Provide handouts.
   ✓ Let the learners explore information from the internet to carry out the task.
   ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
   ✓ Let the learners solve SAMPLE SELF CHECK 4.2

D. Assessment:

   ✓ Assess the learners' performance on OPERATION SHEET 4.2
   ✓ Assess the learners' response to SAMPLE SELF CHECK 4.2
   ✓ Assess the learners based on answers posted in the Google Classroom/social media
   ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

   ✓ CBLM
   ✓ https://www.youtube.com/watch?v=62O6m1-KN_Q   (Servicing photocopy machine)

A. Competency/Competencies:

    i. Ratify any error occurs on scanners.

B. Learning objectives/Topic:

Learning objectives	Topic
4.3.1 Categorise types of scanners and specification *4.3.2* Differentiate between Automatic Document Feeder (ADF) and flatbed *4.3.3* List types of cleaning material *4.3.4* State the causes of scanner failure *4.3.5* Ensure power is off before cleaning *4.3.6* Ensure not to use hard substances to scrub or wipe the glass *4.3.7* Ensure not to apply too much force on the glass *4.3.8* Ensure not to use thinner or corrosive solvent to clean the glass surface *4.3.9* Ensure not to spill the liquid into scanner mechanism or electronic component 4.3.10 Be patient while servicing scanner	4.3 Servicing scanner **Overview:** The topic enables the learners gain knowledge and skills to service scanner.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 4.3
- ✓ Demonstrate OPERATION SHEET 4.3
- ✓ Let the learners perform OPERATION 4.3Let the learners solve SAMPLE SELF CHECK 4.3
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 4.3
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 4.3

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 4.3Assess the learners' response to SAMPLE SELF CHECK 4.3 Assess the learners based on answers posted in the Google Classroom/social media

✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom **and provide necessary feedback using the rubric.**

E. Resources:

✓ CBLM
✓ https://www.youtube.com/watch?v=sycvATm3mc0 **(Servicing scanner)**

MODULE 3: CARRYING OUT INSTALLATION AND CONFIGURATION OF NETWORK

Chapter 1: Preparing for network installation

A. Competency/Competencies:

i. Interpret the drawings and conduct the site survey.

B. Learning objectives/Topic:

Learning objectives	Topic
1.1.1. Define network ✓ Sate the history of network ✓ List the types of networks and networking model ✓ State the benefit of network ✓ Explain the network protocol ✓ State the concept of data communication 1.1.2. State the importance of site survey 1.1.3. Ensure appropriate use of PPE 1.1.4 Ensure to follow OHS rules and regulations	1.1 Conducting site survey **Overview:** The topic enables the learners gain knowledge and skills to conduct site survey.

C. Learning Experiences:

✓ Let the learners read INFORMATION SHEET 1.1
✓ Demonstrate OPERATION SHEET 1.1
✓ Let the learners perform OPERATION 1.1Let the learners solve SAMPLE SELF CHECK 1.1
✓ Provide additional questions
✓ Let the learners read INFORMATION SHEET 1.1
✓ Provide handouts.
✓ Let the learners explore information from the internet to carry out the task.
✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
✓ Let the learners solve SAMPLE SELF CHECK 1.1

D. Assessment:

✓ Assess the learners' performance on OPERATION SHEET 1.1
✓ Assess the learners' response to SAMPLE SELF CHECK 1.1
✓ Assess the learners based on answers posted in the Google Classroom/social media
✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=SPCewaAfqPA   (Conducting site survey)

A. Competency/Competencies:

i. Create network topology

B. Learning objectives/Topic:

Learning objectives	Topic
1.2.1 Define Internet Protocol (IP) addresses *1.2.2* List the types of network topology *1.2.3* State the advantages and limitations of network topology *1.2.4* State the function of topology *1.2.5* Explain the use of IP addresses *1.2.6* Explain the classes of IP addresses *1.2.7* Interpret the network drawing 1.2.8 Read distance unit	1.2 Designing network topology **Overview:** The topic enables the learners gain knowledge and skills to design network topology.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 1.2
- ✓ Demonstrate OPERATION SHEET 1.2
- ✓ Let the learners perform OPERATION 1.2 Let the learners solve SAMPLE SELF CHECK 1.2
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 1.2
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 1.2

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 1.2
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.2
- ✓ Assess the learners based on answers posted in the Google Classroom/social media

✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

✓ CBLM
✓ https://www.youtube.com/watch?v=nSfVXuhtmM8 (Designing network topology)

A. Competency/Competencies:
   i.   Identify the best qualities of the Ethernet cable and its connections
B. Learning objectives/Topic:

Learning objectives	Topic
1.8.1 State the types of communication media *1.8.2* State the categories of unshielded twisted pair (UTP) cables *1.8.3* State the types of connection and its application *1.8.4* Use crimping tools *1.8.5* Use cable tester *1.8.6* Ensure appropriate use of PPE 1.8.7 Ensure to follow OHS rules and regulation	1.3 Preparing Ethernet cable **Overview:** The topic enables the learners gain knowledge and skills on ethernet cable.

C. Learning Experiences:

✓ Let the learners read INFORMATION SHEET 1.3
✓ Demonstrate OPERATION SHEET 1.3
✓ Let the learners perform OPERATION 1.3Let the learners solve SAMPLE SELF CHECK 1.3
✓ Provide additional questions
✓ Let the learners read INFORMATION SHEET 1.3
✓ Provide handouts.
✓ Let the learners explore information from the internet to carry out the task.
✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and then estimate the cost for carrying out the task..
✓ Let the learners solve SAMPLE SELF CHECK 1.3

D. Assessment:

✓ Assess the learners' performance on OPERATION SHEET 1.3

- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.3
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom **and provide necessary feedback using the rubric.**

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=ha3zVvwzMvY **(Ethernet cable)**

Chapter 2: Installing network

A. Competency/Competencies:
- **i.** Perform PVC casing and capping layout and identified the specification.

B. Learning objectives/Topic:

Learning objectives	Topic
2.1.1 State the specification of materials *2.1.2* State the purpose of casing and capping *2.1.3* Interpret drawing *2.1.4* Ensure appropriate use PPE *2.1.5* Ensure to follow OHS rules and regulation 2.1.6 Ensure proper disposal of waste	**2.1** Performing PVC casing and capping **Overview:** The topic enables the learners gain knowledge and skills on PVC casing and capping.

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 2.1
- ✓ Demonstrate OPERATION SHEET 2.1
- ✓ Let the learners perform OPERATION 2.1Let the learners solve SAMPLE SELF CHECK 2.1
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 2.1
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.1

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 1.3
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.1
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=AuU0WqsCxc8&t=50s (PVC casing and capping)

A. Competency/Competencies:
  i.   Checke and fix the Input/output

B. Learning objectives/Topic:

Learning objectives	Topic
2.2.1 State function of I/O box *2.2.2* State the function of networking impact tools *2.2.3* Categories color coding cables for I/O box *2.2.4* Use networking impact tools *2.2.5* Use portable drilling machine 2.2.6 Ensure to use appropriate PPE	2.2 Fixing Input/output (I/O) box **Overview:** The topic enables the learners gain knowledge and skills on input/output (I/O) box**.**

C. Learning Experiences:

- ✓ Let the learners read INFORMATION SHEET 2.2
- ✓ Demonstrate OPERATION SHEET 2.2
- ✓ Let the learners perform OPERATION 2.2
- ✓ Let the learners solve SAMPLE SELF CHECK 2.2
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 2.2
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.2

D. Assessment:

  ✓ Assess the learners' performance on OPERATION SHEET 2.2
  ✓ Assess the learners' response to SAMPLE SELF CHECK 2.2
  ✓ Assess the learners based on answers posted in the Google Classroom/social media
  ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

  ✓ CBLM
  ✓ https://www.youtube.com/watch?v=F18RiREDkwE (Fixing Input/output (I/O) box)

A. Competency/Competencies:
  i.   Install, maintain and repair the fiber optics cables

B. Learning objectives/Topic:

Learning objectives	Topic
2.3.1 Define fibre optic cable 2.3.2 State the function of fibre optic cable 2.3.3 State the types of fibre optic cable 2.3.4 State the types of optic connector 2.3.5 Explain the methods of fibre splicing 2.3.6 State the advantages and limitations of fibre optic cables 2.3.7 State the function of Optical Time-Domain Reflectometer (OTDR) 2.3.8 Use fibre splicer kit 2.3.9 Use fibre optic cleaver 2.3.10 Use OTDR 2.3.11 Ensure appropriate use of PPE 2.3.12 Ensure to follow OHS rules and regulations 2.3.13 Ensure proper disposal of waste	2.4 Performing fibre optics spicing **Overview:** The topic enables the learners gain knowledge and skills on fibre optics spicing**.**

C. Learning Experiences:

  ✓ Let the learners read INFORMATION SHEET 2.3
  ✓ Demonstrate OPERATION SHEET 2.3
  ✓ Let the learners perform OPERATION 2.3

- ✓ Let the learners solve SAMPLE SELF CHECK 2.3
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 2.3
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE **SELF CHECK 2.3**

D. **Assessment:**

- ✓ Assess the learners' performance on OPERATION SHEET 2.3
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.3
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. **Resources:**

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=f2kcJH8ASN8 (fibre optics spicing)

A. **Competency/Competencies:**
   i. Maintain better security of your networks.
B. **Learning objectives/Topic:**

Learning objectives	Topic
2.4.1 Define firewall device *2.4.2* Explain the importance of firewall *2.4.3* list the types of firewall device *2.4.4* State the features of firewall device *2.4.5* Differentiate between hardware and software *2.4.6* Select appropriate location for the installation of firewall device *2.4.7* Interpret installation manual 2.4.8 Ensure correct configuration of and selection of incoming and outgoing ports	2.5 Installing firewall devices **Overview:** The topic enables the learners gain knowledge and skills on firewall devices.

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 2.4
- ✓ Demonstrate OPERATION SHEET 2.4
- ✓ Let the learners perform OPERATION 2.4
- ✓ Let the learners solve SAMPLE SELF CHECK 2.4
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 2.4
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.4

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 2.4
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.4
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=WwHuAxeB1fY (Installing firewall devices)

A. Competency/Competencies:
   i.   Install and configure the cisco router.

B. Learning objectives/Topic:

Learning objectives	Topic
2.5.1 Define cisco router *2.5.2* State function of cisco router *2.5.3* State the types of cisco router *2.5.4* Ensure appropriate use of PPE *2.5.5* Ensure to follow OHS rules and regulations 2.5.6 Ensure correct connection of incoming and outgoing cables	2.6 Installing cisco router **Overview:** The topic enables the learners gain knowledge and skills on cisco router.

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 2.5
- ✓ Demonstrate OPERATION SHEET 2.5
- ✓ Let the learners perform OPERATION 2.5
- ✓ Let the learners solve SAMPLE SELF CHECK 2.5
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 2.5
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the components of the computer/laptop and estimate the cost for carrying out the task.
- ✓ Let the learners solve SAMPLE SELF CHECK 2.5

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 2.5
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.5
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=AOWXTWkQWgo (Installing cisco router)

A. Competency/Competencies:
  i.   Install and configure the network switch

B. Learning objectives/Topic:

Learning objectives	Topic
2.6.1 Define network switch *2.6.2* List types of switch *2.6.3* State function of the network switch *2.6.4* State the features of network switch *2.6.5* Interpret the installation manual *2.6.6* Ensure appropriate use of PPE (Dust mask, Safety Goggles)	2.7 Installing network switch **Overview:** The topic enables the learners gain knowledge and skills on network switch.

2.6.7	Ensure correct configuration of incoming and outgoing port	

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 2.6
- ✓ Demonstrate OPERATION SHEET 2.6
- ✓ Let the learners perform OPERATION 2.6
- ✓ Let the learners solve SAMPLE SELF CHECK 2.6
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 2.6
- ✓ Provide hand-outs.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and they estimate the cost for carrying out the task..
- ✓ Let the learners solve SAMPLE SELF CHECK 2.6

D. **Assessment:**

- ✓ Assess the learners' performance on OPERATION SHEET 2.6
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.6
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. **Resources:**

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=KBHyDd2cJBs   (Installing network switch)

A. **Competency/Competencies:**
   i. Install ,configure and identify of the wifi router

B. Learning objectives/Topic:

Learning objectives	Topic
2.7.1 Introduce the wireless network *2.7.2* Introduce the access point controller *2.7.3* State the function of wireless router or Access Point (AP) *2.7.4* List the types of Wireless Local Area Network (WLAN) *2.7.5* State the categories of wireless standards *2.7.6* Ensure to select the strong security type 2.7.7 Ensure selection of proper router location	2.8 Installing Wi-Fi router **Overview:** The topic enables the learners gain knowledge and skills on Wi-Fi router**.**

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 2.7
- ✓ Demonstrate OPERATION SHEET 2.7
- ✓ Let the learners perform OPERATION 2.7
- ✓ Let the learners solve SAMPLE SELF CHECK 2.7
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 2.7
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and they estimate the cost for carrying out the task..
- ✓ Let the learners solve SAMPLE SELF CHECK **2.7**

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 2.7
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.7
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=y0o-9ivxLUY (Installing Wi-Fi router)

Chapter 3: Configuring network

A. Competency/Competencies:
  i.   Configure the cisco router.

B. Learning objectives/Topic:

Learning objectives	Topic
3.1.1 Explain the basic configuration commands of cisco router *3.1.2* Differentiate between privilege and user mode *3.1.3* Use communication skill *3.1.4* Ensure appropriate use of PPE *3.1.5* Ensure to follow OHS rules and regulations 3.1.6 Ensure correct configuration of commands	**3.1 Configuring cisco router** **Overview:** The topic enables the learners gain knowledge and skills on configuring cisco router.

C. Learning Experiences:

  ✓ Let the learners read INFORMATION SHEET 3.1
  ✓ Demonstrate OPERATION SHEET 3.1
  ✓ Let the learners perform OPERATION 3.1
  ✓ Let the learners solve SAMPLE SELF CHECK 3.1
  ✓ Provide additional questions
  ✓ Let the learners read INFORMATION SHEET 3.1
  ✓ Provide handouts.
  ✓ Let the learners explore information from the internet to carry out the task.
  ✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and they estimate the cost for carrying out the task..
  ✓ Let the learners solve SAMPLE SELF CHECK 3.1

D. Assessment:

  ✓ Assess the learners' performance on OPERATION SHEET 3.1
  ✓ Assess the learners' response to SAMPLE SELF CHECK 3.1
  ✓ Assess the learners based on answers posted in the Google Classroom/social media
  ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

  ✓ CBLM

✓ https://www.youtube.com/watch?v=xOqwxluUCc8   (Configuring cisco router)

A. Competency/Competencies:
i.   Configure the WiFi router.

B. Learning objectives/Topic:

Learning objectives	Topic
3.2.1 Define Internet Service Provider (ISP) 3.2.2 State Service Set Identifier (SSID) and its uses 3.2.3 State the types of authentications 3.2.4 State the types of Encryptions 3.2.5 State the importance of security key 3.2.6 Ensure appropriate use of PPE 3.2.7 Ensure to follow OHS rules and regulations	**3.2 Configuring Wi-fi router** **Overview:** The topic enables the learners gain knowledge and skills on configuring Wi-fi router**.**

C. Learning Experiences:

✓ Let the learners read INFORMATION SHEET 3.2
✓ Demonstrate OPERATION SHEET 3.2
✓ Let the learners perform OPERATION 3.2
✓ Let the learners solve SAMPLE SELF CHECK 3.2
✓ Provide additional questions
✓ Let the learners read INFORMATION SHEET 3.2
✓ Provide hand-outs.
✓ Let the learners explore information from the internet to carry out the task.
✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and they estimate the cost for carrying out the task..
✓ Let the learners solve SAMPLE SELF CHECK **3.2**

D. Assessment:

✓ Assess the learners' performance on OPERATION SHEET 3.2
✓ Assess the learners' response to SAMPLE SELF CHECK 3.2
✓ Assess the learners based on answers posted in the Google Classroom/social media
✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=6LofSwZ1aAs (Configuring Wi-fi router)

A. Competency/Competencies:
  i. Configure the network switch

B. Learning objectives/Topic:

Learning objectives	Topic
3.3.1 State basic Command Line Interface (CLI) commands *3.3.2* State purpose of configuring the switch 3.3.3 Ensure to follow OHS rules and regulations	3.3 Configuring network switch **Overview:** The topic enables the learners gain knowledge and skills on configuring network switch.

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 3.3
- ✓ Demonstrate OPERATION SHEET 3.3
- ✓ Let the learners perform OPERATION 3.3
- ✓ Let the learners solve SAMPLE SELF 3.3
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 3.3
- ✓ Provide hand-outs.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and they estimate the cost for carrying out the task..
- ✓ Let the learners solve SAMPLE SELF CHECK 3.3

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 3.3
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.3
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=OXDXg2s1A4M (Configuring network switch)

A. Competency/Competencies:
   i.   Configure the computer on network

B. Learning objectives/Topic:

Learning objectives	Topic
3.4.1 Explain the configuration of IP address and its Configure computer on network version 3.4.2 Differentiate Dynamic Host Configuration Protocol (DHCP) and static Internet Protocol (IP) address 3.4.3 State the method of basic network troubleshooting commands 3.4.4 *Ensure to select the correct option of static and dynamic IP address*	**3.4 Configuring computer on network** **Overview:** The topic enables the learners gain knowledge and skills on configuring computer on network.

C. **Learning Experiences:**

   ✓ Let the learners read INFORMATION SHEET 3.4
   ✓ Demonstrate OPERATION SHEET 3.4
   ✓ Let the learners perform OPERATION 3.4
   ✓ Let the learners solve SAMPLE SELF 3.4
   ✓ Provide additional questions
   ✓ Let the learners read INFORMATION SHEET 3.4
   ✓ Provide hand-outs.
   ✓ Let the learners explore information from the internet to carry out the task.
   ✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and they estimate the cost for carrying out the task..
   ✓ Let the learners solve SAMPLE SELF CHECK 3.4

D. Assessment:

   ✓ Assess the learners' performance on OPERATION SHEET 3.4
   ✓ Assess the learners' response to SAMPLE SELF CHECK 3.4
   ✓ Assess the learners based on answers posted in the Google Classroom/social media
   ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

   ✓ CBLM
   ✓ https://www.youtube.com/watch?v=bdX52eedMTY (Configuring computer network)

A. Competency/Competencies:
   i. Configure the computer on security software

B. Learning objectives/Topic:

Learning objectives	Topic
3.5.1 State the reasons for configuring the firewall 3.5.2 Explain the different setting available in windows firewall	3.5 Configuring network security software **Overview:** The topic enables the learners gain knowledge and skills on configuring computer on network security software.

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 3.5
- ✓ Demonstrate OPERATION SHEET 3.5
- ✓ Let the learners perform OPERATION 3.5
- ✓ Let the learners solve SAMPLE SELF 3.5
- ✓ Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 3.5
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and they estimate the cost for carrying out the task..
- ✓ Let the learners solve SAMPLE SELF CHECK 3.

D. **Assessment:**

- ✓ Assess the learners' performance on OPERATION SHEET 3.5
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.5
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. **Resources:**

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=6Jubl1UnJTE (Configuring network security software)

A. **Competency/Competencies:**
  i. Configure the computer on document network details

B. Learning objectives/Topic:

Learning objectives	Topic
36.1 Explain the format of maintaining network details 36.2 Draw a network diagram 36.3 *Ensure safe handling of tools and materials*	3.6 Documenting network details **Overview:** The topic enables the learners gain knowledge and skills on configuring document network details.

C. **Learning Experiences:**

- ✓ Let the learners read INFORMATION SHEET 3.6
- ✓ Demonstrate OPERATION SHEET 3.6
- ✓ Let the learners perform OPERATION 3.6
- ✓ Let the learners solve SAMPLE SELF 3.6 Provide additional questions
- ✓ Let the learners read INFORMATION SHEET 3.6
- ✓ Provide handouts.
- ✓ Let the learners explore information from the internet to carry out the task.
- ✓ Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and they estimate the cost for carrying out the task..
- ✓ Let the learners solve SAMPLE SELF CHECK 3.6

D. Assessment:

- ✓ Assess the learners' performance on OPERATION SHEET 3.6
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.6
- ✓ Assess the learners based on answers posted in the Google Classroom/social media
- ✓ Assess the learners through notes and cost estimate for carrying out the task submitted through the Google Classroom and provide necessary feedback using the rubric.

E. Resources:

- ✓ CBLM
- ✓ https://www.youtube.com/watch?v=4WHY7WXefB0 (Documenting network details)

RESOURCES

1) Technical and Vocational Education and Training (TVET) New Normal Curriculum Framework (Classes: PP-XII)
2) Competency Based Learning Materials (Computer Hardware and Networking)