

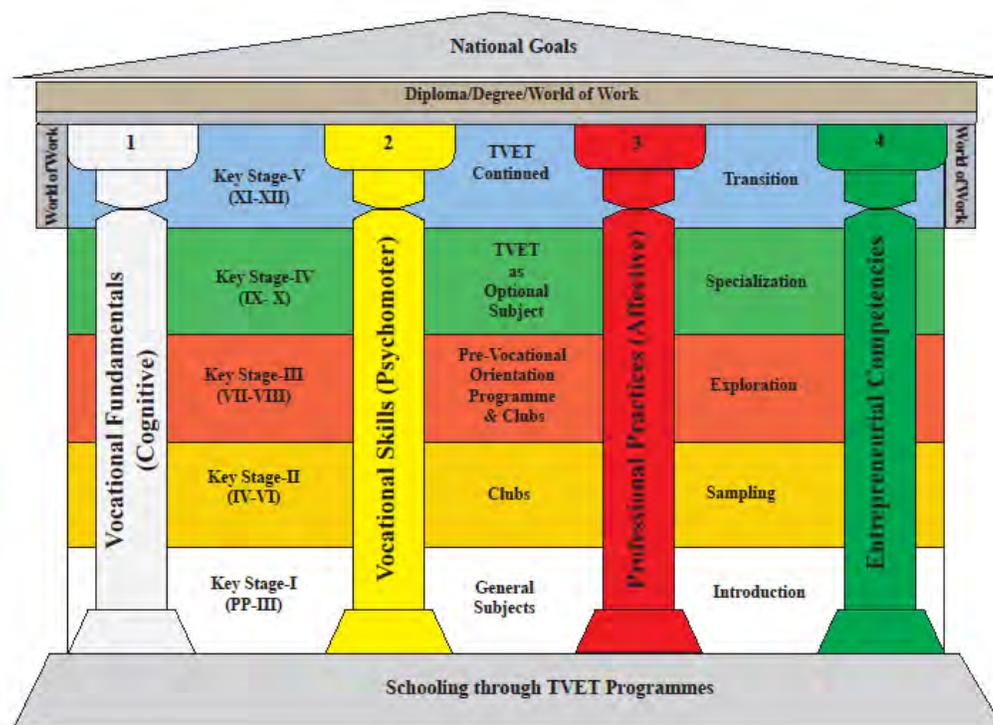
TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET)

NEW NORMAL CURRICULUM

INSTRUCTIONAL GUIDE

(ELECTRICAL)

CLASS: XII



Royal Education Council

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FOREWORD

COVID-19 has suddenly caused unforgiving disruptions in the 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 learning and teaching in traditional settings with physical interactions to the maximum in terms of relevancy and efficiency. This has caused a major problem for children living in poverty worldwide, who often rely on the physical settings of their schools for educational materials, guidance, and, sometimes, the only decent meal of the day.

In the new normal education, human interaction and well-being is a priority. Technology, particularly digital technology that enables communication, collaboration and learning across distance, is a formidable tool – not a panacea but 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 will 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 New Normal 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 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.

Kinga Dakpa,

Director General

INTRODUCTION

Technical and Vocational Education and Training (TVET) is education and training which provides knowledge and skills for employment. It comprises of education, training and skills development related to a wide range of occupational fields, production, services and livelihood. The Royal Education Council and Ministry of Education envisage 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 Rinchening) in Phuntsholing. Even after that, major curriculum reform was planned by the then Department of Curriculum Research and Development (DCRD) under the Ministry of Education 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 under Ministry of Education, 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 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 New Normal Curriculum Instructional Guide is prepared not only to encourage blended learning but also to facilitate remote learning. Thus, the guide would help the schools to implement the curriculum effectively without limiting to contact teaching/learning besides using a variety of pedagogies.

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A. Learning objectives/Broad theme / Strand/Chapter:

Module II Carrying out Domestic and Commercial Building wiring

Chapter 1: Preparing for electrical wiring

Learning objectives	Core concepts (Chapters/Topics)
1.3.1 Interpret electrical drawing. <i>1.3.2 Ensure to draw the layout as per the given single line diagram.</i> 1.3.3 Prepare layout	1.3 Preparing layout

B. Competencies:

- ✓ Prepare layout as per the drawing

C. Pedagogy/Learning Experiences

• **Contact:**

- ✓ Let the learner's read INFORMATION SHEET 1.3
- ✓ Provide handouts to learners
- ✓ Provide the web link https://www.youtube.com/watch?v=srxGewy_hLU containing information about how to develop a single line and wiring diagram of a residents
- ✓ Let the learner's read and perform OPERATION SHEET 1.3
- ✓ For better understanding, assign learners with different building blocks found within the school campus to let them use their knowledge to draw single line diagrams and wiring diagrams.

• **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 1.3
- ✓ The teacher may provide the web link, handouts, self-made tutorial video clips containing information about how to develop a single line and wiring diagram of residents.
https://www.youtube.com/watch?v=srxGewy_hLU
- ✓ Let the learners discuss in the group and submit their response about preparing layout through google classroom.

D. Assessment:

• **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.3 and perform OPERATION SHEET 1.3 and assess them using the checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners do SAMPLE SELF CHECK 1.3 assess their response submitted in Google Classroom.
- ✓ Giving them clear instructions on how to draw a wiring diagram, design a simple house layout, and let the learners develop a wiring diagram. This assignment can be used in the assessment of the learner's understanding.

- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 1.3 and perform OPERATION SHEET 1.3 and ask them to send short video/image as evidence through google classroom
 - ✓ Let the student solve SAMPLE CHECK 1.3 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
 - ✓ Develop a single-line diagram and let the learner interpret and write the wiring diagram.

E. Resources (online and offline):

- ✓ CBLM for class
https://www.youtube.com/watch?v=srxGewy_hLU (show examples of how to draw wiring diagram)
- ✓ Handouts

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
1.4.1 List types of wire joints. 1.4.2 State the application of wire joints. <i>1.4.3 Ensure safe handling of tools.</i> <i>1.4.4 Ensure to use appropriate tools for removing insulation of the wire.</i> 1.4.5 Prepare wire joints	1.4 Preparing wire joints

B. Competencies:

- ✓ Use different types of wire joints in house wiring and maintenance.

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Let the learner's read INFORMATION SHEET 1.4
 - ✓ Provide handouts to learners
 - ✓ Provide web link https://www.youtube.com/watch?v=F-_O2x6GFQA which will help learners get more idea about how to make different wire joints.
 - ✓ Let the learner's read and perform OPERATION SHEET 1.4
 - ✓ Provide the learners with few centimeters of wire available in the school and let every individual learner make different types of joint practically so that they have a hands-on experience and make them engaged fully during the lesson.
- **Non-contact:**
 - ✓ Let the learners read INFORMATION SHEET 1.4
 - ✓ Provide web link https://www.youtube.com/watch?v=F-_O2x6GFQA that explains how to make wire joints.
 - ✓ The teacher may provide the web link, handouts, self-made tutorial video clips containing information about different kinds of wire joints

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- ✓ Let the learner make different types of wiring joints with any kind of wire available at their home and send the image or short video clips as evidence in google classroom or any available social media platform.

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.4 and perform OPERATION SHEET 1.4 and assess them using the checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 1.4
- ✓ Let the learners do the presentation and assess as per the rubric development
- ✓ Let the learners demonstrate how to make wire joints and assess their steps and their joints at last.

- **Non-contact:**

- ✓ Make the learners read INFORMATION SHEET 1.4 and perform OPERATION SHEET 1.4 and ask them to send short video/image as evidence through google classroom
- ✓ Let the student solve SAMPLE CHECK 1.4 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- <https://www.youtube.com/watch?v=F-O2x6GFQA> (shows how to make three kinds of wire joints)
- ✓ Handouts

Chapter 2: Performing wiring**A. Learning Objectives / Broad theme / Strand/Chapter:**

Learning objectives	Core concepts (Chapters/Topics)
2.1.1 Explain types of conduits. 2.1.2 Explain different types of the wiring system. 2.1.3 State the advantages and disadvantages of surface and concealed wiring. <i>2.1.4 Use hacksaw.</i> <i>2.1.5 Collaborate and work in a team.</i> 2.1.6 Ensure safe handling of materials. 2.1.7 Ensure to cut PVC/MS conduit/casing capping as per the measurement. 2.1.8 Ensure to use PPE 2.1.9 Lay conduit	2.1 Laying Conduit

B. Competencies:

- ✓ Carry out laying conduit for lightings and power outlets

C. Pedagogy/Learning Experiences**• Contact:**

- ✓ Make learners read INFORMATION SHEET 2.1
- ✓ Provide handouts to learners
- ✓ Provide web link <https://youtu.be/aE1cek7rQsk> which explains the difference between open and concealed wiring.
- ✓ Make learners perform OPERATION SHEET 2.1
- ✓ Divide the learner's into groups and then discuss different types of conduit laying (definition, advantages, disadvantages, application) and let them present to the class.

• Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET
- ✓ Provide the web link <https://youtu.be/aE1cek7rQsk> that explains the difference between open and concealed wiring.
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Give assignments to discover the types of wiring available in the surrounding area and let them explain the advantages and disadvantages of the wiring used.

D. Assessment:**• Contact:**

- ✓ Make learners read INFORMATION SHEET 2.1 and perform OPERATION SHEET 2.1 and assess them using the checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner's knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.1
-

- ✓ Let the learners do the presentation and assess as per the rubric development
- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 2.1
 - ✓ Let the student solve SAMPLE CHECK 2.1 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
<https://youtu.be/aE1cek7rQsk> (Explanation on the difference between concealed and open wiring)
- ✓ Handouts

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.2.1 List types fittings. 2.2.2 Explain wiring diagram 2.2.3 <i>Pre-test fittings and fixtures.</i> 2.2.4 <i>Collaborate and work in a team.</i> 2.2.5 <i>Ensure safe handling of tools and materials.</i> 2.2.6 <i>Ensure to use the appropriate tool for removing insulation of the wire.</i> 2.2.7 <i>Ensure to use PPE.</i> 2.2.8 Perform wiring for light points (two/three lamps)	2.2 Performing wiring for light points (two/three lamps)

B. Competencies:

- ✓ Perform wiring to provide illumination

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.2
 - ✓ Provide handouts to learners
 - ✓ Make learners perform OPERATION SHEET 2.2
 - ✓ Demonstrates the learners on the steps to conduct the wiring diagram.
- **Non-contact:**
 - ✓ Instruct learners to read INFORMATION SHEET 2.2
 - ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
 - ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

-
- ✓ Provide the learner with the single line diagram of a house and let them develop a wiring diagram and do estimate and costing.

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.2 and perform OPERATION SHEET 2.2 and assess them using the checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.2
- ✓ Let the learners do the presentation and assess as per the rubric development

- **Non-contact:**

- ✓ Make the learners read INFORMATION SHEET 2.2
- ✓ Let the student solve SAMPLE CHECK 2.2 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.3.1 State the purpose of the IR test. 2.3.2 Use megger. 2.3.3 <i>Collaborate and work in a team.</i> 2.3.4 <i>Ensure safe handling of megger.</i> 2.3.5 <i>Ensure to use PPE.</i> 2.3.6 Perform Insulation Resistance (IR) test	2.3 Performing Insulation Resistance (IR) test

B. Competencies:

- ✓ Perform IR test to avoid short circuit
- ✓ Use different equipment other than megger to conduct IR tests such as multi-meter and test lamp

C. Pedagogy/Learning Experiences

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.3
 - ✓ Provide handouts to learners
 - ✓ Provide web link <https://www.youtube.com/watch?v=wxSL6oDkhGU> which explains about IR test and its procedures
-

-
- ✓ Make learners perform OPERATION SHEET 2.3
 - ✓ Demonstrate the learner on the steps to conduct IR test

 - **Non-contact:**
 - ✓ Instruct learners to read INFORMATION SHEET 2.3
 - ✓ Provides weblink <https://www.youtube.com/watch?v=wxSL6oDkhGU> to make the learner's clear about IR test and its procedures.
 - ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
 - ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media
 - ✓ Provide the learner with the single line diagram of a house and let them develop a wiring diagram and do estimate and costing.

D. Assessment:

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.3 and perform OPERATION SHEET 2.3 and assess them using the checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner's knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.3
 - ✓ Conduct a question-answer session with the learner's to assess the learners conceptual understanding of the IR test

- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 2.3, take notes and let them submit through google classroom
 - ✓ Let the student solve SAMPLE CHECK 2.3 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for classes X and XII
- ✓ Handouts
<https://www.youtube.com/watch?v=wxSL6oDkhGU> (Explanation on IR test and its procedures)

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (chapters/topics)
2.4.1 State the purpose of continuity/open circuit test. 2.4.2 Use megger. 2.4.3 Collaborate and work in a team. 2.4.4 Ensure safe handling of megger. 2.4.5 Ensure to use PPE. 2.4.6 Perform continuity/open circuit test	2.4 Performing continuity/open circuit test

B. Competencies:

- ✓ perform continuity/open circuit test to check for damaged components or broken conductors in a circuit which may lead to an open circuit

C. Pedagogy/Learning Experiences**• Contact:**

- ✓ Make learners read INFORMATION SHEET 2.4
- ✓ Provide handouts to learners
- ✓ Make learners perform OPERATION SHEET 2.4
- ✓ Demonstrate the learner on the steps to conduct continuity/open test

• Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET 2.4
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:**• Contact:**

- ✓ Make learners read INFORMATION SHEET 2.4 and perform OPERATION SHEET 2.4 and assess them using the checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.4
- ✓ Let the learners do the presentation and assess as per the rubric development

• Non-contact:

- ✓ Make the learners read INFORMATION SHEET 2.4, make notes and ask them to send the image as evidence through google classroom
- ✓ Let the student solve SAMPLE CHECK 2.4 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.5.1 State the purpose of the polarity test. 2.5.2 Use megger. 2.5.3 Collaborate and work in a team. 2.5.4 <i>Ensure safe handling of megger.</i> 2.5.5 <i>Ensure to use PPE.</i> 2.5.6 Performing polarity test	2.5 Performing polarity test

B. Competencies:

- ✓ Perform polarity test to check the presence of live in protective switch gears and switches

C. Pedagogy/Learning Experiences

• **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.5
- ✓ Provide handouts to learners
- ✓ Provide web link https://www.youtube.com/watch?v=xoUHbf_bRxw which explains about polarity check with a multi-meter
- ✓ Make learners perform OPERATION SHEET 2.5

• **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 2.5
- ✓ Provides web link https://www.youtube.com/watch?v=xoUHbf_bRxw to make the learner's clear about how to check the polarity with a multi-meter.
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

• **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.5 and perform OPERATION SHEET 2.5 2.and assess them using the checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner's knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.5 and assess their response
 - ✓ Let the learners do the presentation and assess as per the rubric development
 - ✓ Conduct test (both theory and practical) with the learner's to assess the learners conceptual understanding of the polarity test
-

- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 2.5, make notes and let the learners submit it in Google Classroom.
 - ✓ Let the student solve SAMPLE CHECK 2.5 and submit the answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for classes X and XII
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=xoUHbf_bRxw (Explanation on how to check the polarity with a multi-meter.)

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.6.1 Explain the purpose of staircase wiring. 2.6.2 Explain wiring diagram 2.6.3 Pre-test fittings and fixtures. 2.6.4 <i>Collaborate and work in a team</i> 2.6.5 <i>Ensure safe handling of tools and materials.</i> 2.6.6 <i>Ensure to use the appropriate tool for removing insulation of the wire.</i> 2.6.7 <i>Ensure to use PPE.</i> 2.6.8 Perform staircase wiring	2.6 Performing staircase wiring

B. Competencies:

- ✓ Perform staircase wiring to control lamp with ease from two locations

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.6
 - ✓ Provide handouts to learners
 - ✓ Provide a web link to make the learner's clear about how to perform staircase wiring <https://www.youtube.com/watch?v=Ipm5uycOncs>
 - ✓ Make learners perform OPERATION SHEET 2.6
 - ✓ Pair up the student and let them explore the information about staircase wiring
- **Non-contact:**
 - ✓ Instruct learners to read INFORMATION SHEET 2.6
 - ✓ Provide the web link to make the learner's clear about how to perform staircase wiring <https://www.youtube.com/watch?v=Ipm5uycOncs>

- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.6 and perform OPERATION SHEET 2.6 and assess them using the checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner’s knowledge by asking questions.
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.6 and assess their response
 - ✓ Conduct VIVA to assess their understanding of staircase wiring.
- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 2.6, take notes and send the image as evidence through google classroom
 - ✓ Let the student solve SAMPLE CHECK 2.6 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.
 - ✓ Give additional questions and let them submit them in google classroom or any other social media

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts
- ✓ <https://www.youtube.com/watch?v=Ipm5uycOnCs> (Shows how to perform staircase wiring)

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.7.1 Explain the function of go-down wiring. 2.7.2 Explain wiring diagram. 2.7.3 <i>Pre-test fittings and fixtures.</i> 2.7.4 <i>Collaborate and work in a team.</i> 2.7.5 <i>Ensure safe handling of tools and materials.</i> 2.7.6 <i>Ensure to use the appropriate tool for removing insulation of the wire.</i> 2.7.7 <i>Ensure to use PPE.</i> 2.7.8 Perform go-down wiring	2.7 Performing go-down wiring

B. Competencies:

- ✓ Perform go-down wiring for economical use of electricity

C. Pedagogy/Learning Experiences**• Contact:**

- ✓ Make learners read INFORMATION SHEET 2.7
- ✓ Provide handouts to learners
- ✓ Provides weblink https://www.youtube.com/watch?v=_o3DLMZFnmg to make the learners understand about go-down wiring
- ✓ Make learners perform OPERATION SHEET 2.7

• Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET 2.7
- ✓ Provides web link https://www.youtube.com/watch?v=_o3DLMZFnmg to make the learners understand about go-down wiring
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Provide the learner with the single line diagram and let them develop wiring diagram and do the estimate and costing and submit it in google classroom

D. Assessment:**• Contact:**

- ✓ Make learners read INFORMATION SHEET 2.7 and perform OPERATION SHEET 2.7 and assess them using the checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.7 and assess their response
- ✓ Let the learners do the presentation and assess as per the rubric development

• Non-contact:

- ✓ Make the learners read INFORMATION SHEET 2.7, take notes and submit through google classroom
- ✓ Let the student solve SAMPLE CHECK 2.7 and submit the answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
 - ✓ Handouts
 - ✓ https://www.youtube.com/watch?v=_o3DLMZFnmg (Explanation on go-down and its procedures)
-

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.8.1 Explain the working principle of call bell wiring 2.8.2 State the application of call bell wiring 2.8.3 Explain wiring diagram. 2.8.4 Pre-test fittings and fixtures. 2.8.5 <i>Collaborate and work in a team.</i> 2.8.6 <i>Ensure safe handling of tools and materials.</i> 2.8.7 <i>Ensure to use the appropriate tool for removing insulation of the wire.</i> 2.8.8 <i>Ensure to use PPE.</i> 2.8.9 Performing call bell wiring	2.8 Performing call bell wiring

B. Competencies:

- ✓ Perform call bell wiring to alert the occupant

C. Pedagogy/Learning Experiences**• Contact:**

- ✓ Make learners read INFORMATION SHEET 2.8
- ✓ Provide handouts to learners
- ✓ Provide web link https://www.youtube.com/watch?v=O_OfswJjggY which explains the ways of performing call bell wiring
- ✓ Make learners perform OPERATION SHEET 2.8
- ✓ Using previous knowledge of interpreting the layout diagram, let a student explain the wiring diagram to the class

• Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET 2.8
- ✓ Provide the web link https://www.youtube.com/watch?v=O_OfswJjggY that explains the ways of call bell wiring
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media
- ✓ Provide the learner with the single line diagram of a house and let them develop a wiring diagram and do estimate and costing.

D. Assessment:**• Contact:**

- ✓ Make learners read INFORMATION SHEET 2.8 and perform OPERATION SHEET 2.8 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding

- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.8 and assess their response
 - ✓ Let the learners do the presentation and assess as per the rubric development
 - ✓ Conduct a question-answer session with the learner's to assess the learners conceptual understanding of call-bell wiring
- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 2.8, take notes and submit through google classroom
 - ✓ Let the student solve SAMPLE CHECK 2.8 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using rubrics.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts
https://www.youtube.com/watch?v=O_OfswJjggY (Shows the connection of call bell wiring to be used at home)

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.9.1 Explain the purpose of hostel wiring. 2.9.2 Explain wiring diagram. 2.9.3 Pre-test fittings and fixtures. 2.9.4 <i>Collaborate and work in a team.</i> 2.9.5 <i>Ensure safe handling of tools and materials.</i> 2.9.6 <i>Ensure to use the appropriate tool for removing insulation of wiring.</i> 2.9.7 <i>Ensure to use PPE.</i> 2.9.8 Perform hostel wiring	2.9 Performing hostel wiring

B. Competencies:

- ✓ Perform hostel to obtain independent controls of lamps and for efficient use of electricity

C. Pedagogy/Learning Experiences

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.9
- ✓ Provide handouts to learners
- ✓ Make learners perform OPERATION SHEET 2.9

- **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 2.9
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media
- ✓ Provide the learner with the single line diagram of a house and let them develop a wiring diagram and do estimate and costing.

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.9 and perform OPERATION SHEET 2.9 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.9 and assess their response
- ✓ Let the learners do the presentation and assess as per the rubric development
- ✓ Conduct a test to see the ability of the student to develop a layout diagram and wiring diagram

- **Non-contact:**

- ✓ Make the learners read INFORMATION SHEET 2.9, take notes and submit through google classroom
- ✓ Let the student solve SAMPLE CHECK 2.9 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts

Learning objectives	Core concepts (Chapters/Topics)
2.10.1 Explain the wiring diagram. 2.10.2 Pre-test fittings and fixtures. 2.10.3 Collaborate and work in a team. 2.10.4 Ensure safe handling of tools and materials. 2.10.5 Ensure to use the appropriate tool for removing insulation of the wire. 2.10.6 Ensure to use PPE. 2.10.7 Perform wiring consisting of light and power points	2.10 Performing wiring consisting of light and power points

B. Competencies:

- ✓ Perform wiring for lighting and power points to provide illumination and source of electricity

C. Pedagogy/Learning Experiences

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.10
- ✓ Provide handouts to learners.
- ✓ Make learners perform OPERATION SHEET 2.10

- **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 2.10
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.10 and perform OPERATION SHEET 2.10 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.10 and assess their response
- ✓ Test the knowledge on drawing wiring diagrams from the single line diagram given in the textbook.

- **Non-contact:**

- ✓ Make the learners read INFORMATION SHEET 2.10, take notes and submit through google classroom

- ✓ Let the learners solve SAMPLE CHECK 2.10 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts

Chapter 3: Installing control board and switch gears

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
3.1.1 Define control board. 3.1.2 State the function of the control board. 3.1.3 Explain the specification of the control board. 3.1.4 State the purpose of installing a control board. 3.1.5 <i>Collaborate and work in a team.</i> 3.1.6 <i>Ensure safe handling of the control board.</i> 3.1.7 <i>Ensure to use PPE.</i> 3.1.8 Install the main control board	3.1 Installing the main control board

B. Competencies:

- ✓ Install the main control board for protective switch gears

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 3.1
 - ✓ Provide handouts to learners
 - ✓ Share the web link <https://www.youtube.com/watch?v=TiEJYQYTz6U> can be shared with the learners which explain how to install the control board
 - ✓ Make learners perform OPERATION SHEET 3.1

- **Non-contact:**
 - ✓ Instruct learners to read INFORMATION SHEET 3.1
 - ✓ Provide a web link explaining how to the install control board <https://www.youtube.com/watch?v=TiEJYQYTz6U>
 - ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
 - ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media
 - ✓ The teacher may provide the web link, handouts, self-made tutorial video clips.

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 3.2 and perform OPERATION SHEET 3.2 and assess them using the checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner’s knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 3.2 and assess their response
- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 3.2, take notes and submit through google classroom
 - ✓ Let the student solve SAMPLE CHECK 3.2 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for classes X and XII
- ✓ Handouts
- ✓ <https://www.youtube.com/watch?v=TiEJYQYTz6U> (explains about how to install control board)

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
3.2.1 Define energy meter. 3.2.2 Explain the working principle of the energy meter. 3.2.3 State the purpose of installing an energy meter. 3.2.4 <i>Collaborate and work in a team.</i> 3.2.5 <i>Ensure safe handling of energy meter.</i> 3.2.6 <i>Ensure to use PPE.</i> 3.2.7 Install energy meter	3.2 Installing energy meter

B. Competencies:

- ✓ Install energy meter to measure the energy consumed

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 3.2
 - ✓ Provide handouts to learners
 - ✓ Provide web link <https://www.youtube.com/watch?v=5YNSiE7HWsY> which explains about how to install energy meter
 - ✓ Make learners perform OPERATION SHEET 3.2
- **Non-contact:**

-
- ✓ Instruct learners to read INFORMATION SHEET
 - ✓ Provide the web link <https://www.youtube.com/watch?v=5YNSiE7HWsY> that explains how to install an energy meter
 - ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
 - ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media.

D. Assessment:

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 3.2 and perform OPERATION SHEET 3.2 and assess them using the checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner’s knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 3.2 and assess their response
- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 3.2, take notes and submit through google classroom
 - ✓ Let the student solve SAMPLE CHECK 3.2 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using the checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts
- ✓ <https://www.youtube.com/watch?v=5YNSiE7HWsY> (Explanation on how to install energy meter)

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
3.3.1 Define protective switchgear. 3.3.2 State the function of protective switchgear. 3.3.3 <i>Collaborate and work in a team.</i> 3.3.4 <i>Ensure safe handling of protective switchgear.</i> 3.3.5 <i>Ensure to use PPE.</i> 3.3.6 Install protective Switchgears	3.3 Installing protective Switchgears

B. Competencies:

- ✓ Install protective switchgear to protect the electrical appliances from faults and humans from electric shock.
-

C. Pedagogy/Learning Experiences

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 3.3
- ✓ Provide handouts to learners
- ✓ Provide web link https://www.youtube.com/watch?v=_zeXKdIzlm4 which explains about protective switchgear
- ✓ Make learners perform OPERATION SHEET 3.3
- ✓ Take the learners for a field visit to the nearby substation and let them explore the different kinds of protective switchgear used.

- **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 3.3
- ✓ Provide the web link https://www.youtube.com/watch?v=_zeXKdIzlm4 which explains about protective switchgear
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Let the learner discuss in a group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 3.3 and perform OPERATION SHEET 3.3 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 3.3 and assess their response
- ✓ Let the learners do the presentation and assess as per the rubric development

- **Non-contact:**

- ✓ Make the learners read INFORMATION SHEET 3.3, take notes and submit through google classroom
- ✓ Let the student solve SAMPLE CHECK 3.3 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts
- ✓ https://www.youtube.com/watch?v=_zeXKdIzlm4 (Explanation on protective switchgear)

MODULE: INTERPRETING ENGINEERING DRAWING

Chapter: 1 Basic Engineering Drawing

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
1.2.1 Define engineering drawing. 1.2.2 State the purposes of engineering drawing. 1.2.3 List the types of drawing instruments. 1.2.4 State uses of drawing instruments. 1.2.5 List types and sizes of drawing papers. <i>1.2.6 Ensure clean and neatness of drawing.</i> <i>1.2.7 Ensure proper handling of drawing instruments.</i> 1.2.8 Use drawing instruments	1.2 Using drawing instruments

B. Competencies:

- ✓ Use drawing instruments to draw technical drawing

C. Pedagogy/Learning Experiences

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.2
- ✓ Provide handouts to learners
- ✓ Provide link explaining about different types of drawing instrument used in engineering drawing <https://www.youtube.com/watch?v=0Q6QwvtjVm8>
- ✓ Make learners perform OPERATION SHEET 1.2
- ✓ Take all the drawing instruments, show them with descriptions and pass them around in the classroom and let them see and feel it.

- **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 1.2
- ✓ Provide link explaining about different types of drawing instrument used in engineering drawing <https://www.youtube.com/watch?v=0Q6QwvtjVm8>
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.2 and perform OPERATION SHEET 1.2 and assess them using the checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner's knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
-

- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 1.2 and assess their response
- **Non-contact:**
- ✓ Make the learners read INFORMATION SHEET 1.2, take notes and submit through google classroom
- ✓ Let the student solve SAMPLE CHECK 1.2 and submit the answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Handouts
- ✓ <https://www.youtube.com/watch?v=0Q6QwvtjVm8> (Explanation on the instruments used in engineering drawing)

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
1.3.1 Define layout. 1.3.2 List terminology for layouts. 1.3.3 Define title block. 1.3.4 Explain the purpose of title block. 1.3.5 Use drawing sheet. <i>1.3.6 Be responsible and vigilant while using drawing sheets.</i> 1.3.7 Layout of the drawing sheet	1.3 Laying out of drawing sheet

B. Competencies:

- ✓ Layout drawing sheet to create drawing space

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 1.3
 - ✓ Provide hand-outs to learners
 - ✓ Make learners perform OPERATION SHEET 1.3
- **Non-contact:**
 - ✓ Instruct learners to read INFORMATION SHEET 1.3
 - ✓ Provide hand-outs, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
 - ✓ Instruct learners to perform OPERATION SHEET 1.3

- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media.

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.3 and perform OPERATION SHEET 1.3 and assess them using the checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner’s knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 1.3 and assess their response
- ✓ Let the learners do the presentation and assess as per the rubric development
- ✓ Conduct test both theory and practical

- **Non-contact:**

- ✓ Make the learners read INFORMATION SHEET 1.3 and perform OPERATION SHEET 1.3 and submit through google classroom
- ✓ Let the student solve SAMPLE CHECK 1.3 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Hand-outs

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
1.4.1 Define sign and symbol. 1.4.2 Explain the importance of signs and symbols. 1.4.3 Identify types of signs and symbols. 1.4.4 Define abbreviation. 1.4.5 Describe the purpose of the abbreviation. 1.4.6 Identify abbreviation. <i>1.4.7 Ensure clean and neatness of drawing.</i> <i>1.4.8 Ensure proper handling of drawing instruments</i> 1.4.9 Interpret Engineering signs, symbols and abbreviation	1.4 Interpreting Engineering signs, symbols and abbreviation

B. Competencies:

- ✓ Draw engineering signs, symbols and abbreviations to interpret Engineering signs, symbols and abbreviation

C. Pedagogy/Learning Experiences

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.4
- ✓ Provide handouts to learners
- ✓ Make learners perform OPERATION SHEET 1.4

- **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 1.4
- ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Instruct learners to perform OPERATION SHEET 1.4
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.4 and perform OPERATION SHEET 1.4 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 1.4 and assess their response

- **Non-contact:**

- ✓ Make the learners read INFORMATION SHEET 1.4 and perform OPERATION SHEET 1.4 submit through google classroom
- ✓ Let the student solve SAMPLE CHECK 1.4 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Hand-outs

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
1.5.1 Define line. 1.5.2 State the uses of different lines. 1.5.3 Identify types of lines. <i>1.5.4 Ensure clean and neatness of drawing.</i> <i>1.5.5 Ensure proper handling of drawing instruments.</i> 1.5.6 Draw different types of lines	1.5 Drawing different types of lines

B. Competencies:

- ✓ Draw types of lines to apply in engineering drawing

C. Pedagogy/Learning Experiences**• Contact:**

- ✓ Make learners read INFORMATION SHEET 1.5
- ✓ Provide hand-outs to learners
- ✓ Make learners perform OPERATION SHEET 1.5

• Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET 1.5
- ✓ Provide hand-outs, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Instruct learners to perform OPERATION SHEET 1.5
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:**• Contact:**

- ✓ Make learners read INFORMATION SHEET 1.5 and perform OPERATION SHEET 1.5 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 1.5 and assess their response

• Non-contact:

- ✓ Make the learners read INFORMATION SHEET 1.5 and perform OPERATION SHEET 1.5 and assess the work submitted through google classroom

- ✓ Let the student solve SAMPLE CHECK 1.5 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Hand-outs

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
1.6.1 Define lettering and numbering. 1.6.2 List the types of letters. 1.6.3 Describe the requirement for lettering. <i>1.6.4 Ensure clean and neatness of drawing.</i> <i>1.6.5 Ensure proper handling of drawing instruments.</i> 1.6.6 Letter and numbering	1.6 Lettering and numbering

B. Competencies:

- ✓ Draw letter and numbering to write detailed specifications in the drawing

C. Pedagogy/Learning Experiences

• **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.6
- ✓ Provide hand-outs to learners
- ✓ Make learners perform OPERATION SHEET 1.6

• **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 1.6
- ✓ Provide hand-outs, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Instruct learners to perform OPERATION SHEET 1.6
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

• **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.6 and perform OPERATION SHEET 1.6 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions

- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 1.6 and assess their response
- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 1.6 and perform OPERATION SHEET 1.6 and assess the work submitted through google classroom
 - ✓ Let the student solve SAMPLE CHECK 1.6 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.
- E. Resources (online and offline):**
 - ✓ CBLM for class XII
 - ✓ Hand-outs

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
1.7.1 Define dimension. 1.7.2 State the terminologies of dimensions. 1.7.3 <i>Ensure clean and neatness of drawing.</i> 1.7.4 <i>Ensure proper handling of drawing instruments.</i> 1.7.5 Dimension	1.7 Dimensioning

B. Competencies:

- ✓ Provide dimensioning for detailed measurement.

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 1.7
 - ✓ Provide hand-outs to learners
 - ✓ Make learners perform OPERATION SHEET 1.7
- **Non-contact:**
 - ✓ Instruct learners to read INFORMATION SHEET 1.7
 - ✓ Provide handouts, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
 - ✓ Instruct learners to perform OPERATION SHEET 1.7
 - ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 1.7 and perform OPERATION SHEET 1.7 and assess them using a checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner’s knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 1.7 and assess their response

- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 1.7 and perform OPERATION SHEET 1.7 and assess the work submitted through google classroom
 - ✓ Let the student solve SAMPLE CHECK 1.7 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Hand-outs

Chapter: 2 Interpreting Basic Engineering Drawing

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.4.1 Define the scale of the drawing. 2.4.2 List types of scale. 2.4.3 <i>Ensure clean and neatness of drawing.</i> 2.4.4 <i>Ensure proper handling of drawing instruments.</i> 2.4.5 Convert Scale for drawing	2.4 Converting Scale for drawing

B. Competencies:

- ✓ Convert drawing scale to reduce and enlarge the dimension of an object.

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.4

- ✓ Provide hand-outs to learners
- ✓ Make learners perform OPERATION SHEET 2.4
- **Non-contact:**
 - ✓ Instruct learners to read INFORMATION SHEET 2.4
 - ✓ Provide hand-outs, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
 - ✓ Instruct learners to perform OPERATION SHEET 2.4
 - ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.4 and perform OPERATION SHEET 2.4 and assess them using a checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner’s knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.4 and assess their response
- **Non-contact:**
 - ✓ Make the learners read INFORMATION SHEET 2.4 and perform OPERATION SHEET 2.4 and assess the work submitted through google classroom
 - ✓ Let the student solve SAMPLE CHECK 2.4 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
 - ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Hand-outs

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.5.1 Define isometric drawing. 2.5.2 State isometric terminologies. 2.5.3 Use drawing instruments. 2.5.4 <i>Ensure clean and neatness of drawing.</i> 2.5.5 <i>Ensure proper handling of drawing instruments.</i> 2.5.6 Draw Isometric blocks	2.5 Drawing Isometric blocks

B. Competencies:

- ✓ Draw isometric blocks to identify different views of the drawing

C. Pedagogy/Learning Experiences

• Contact:

- ✓ Make learners read INFORMATION SHEET 2.5
- ✓ Provide hand-outs to learners
- ✓ Make learners perform OPERATION SHEET 2.5

• Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET 2.5
- ✓ Provide hand-outs, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
- ✓ Instruct learners to perform OPERATION SHEET 2.5
- ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

• Contact:

- ✓ Make learners read INFORMATION SHEET 2.5 and perform OPERATION SHEET 2.5 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's knowledge by asking questions
- ✓ Conduct class test to assess their understanding
- ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.5 and assess their response

• Non-contact:

- ✓ Make the learners read INFORMATION SHEET 2.5 and perform OPERATION SHEET 2.5 and assess the work submitted through google classroom
- ✓ Let the student solve SAMPLE CHECK 2.5 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII

- ✓ Hand-outs

A. Learning Objectives / Broad theme / Strand/Chapter:

Learning objectives	Core concepts (Chapters/Topics)
2.6.1 Define orthographic drawing. 2.6.2 List the four quadrants. 2.6.3 State types of orthographic projections. 2.6.4 Differentiate between first and third angle projection. 2.6.5 Use drawing instruments 2.6.6 <i>Ensure clean and neatness of drawing.</i> 2.6.7 <i>Ensure proper handling of drawing instruments.</i> 2.6.8 Draw orthographic projection	2.6 Drawing orthographic projection

B. Competencies:

- ✓ Draw orthographic projections to interpret orthographic projections.

C. Pedagogy/Learning Experiences

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.6
 - ✓ Provide hand-outs to learners
 - ✓ Make learners perform OPERATION SHEET 2.6
- **Non-contact:**
 - ✓ Instruct learners to read INFORMATION SHEET 2.6
 - ✓ Provide hand-outs, self-made tutorial video clips, and PPT through Google Classroom or any other relevant social media
 - ✓ Instruct learners to perform OPERATION SHEET 2.6
 - ✓ Let the learner discuss in the group and submit their response through Google Classroom or any other relevant social media

D. Assessment:

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.6 and perform OPERATION SHEET 2.6 and assess them using a checklist/performance guide. Provide necessary intervention.
 - ✓ Assess learner's knowledge by asking questions
 - ✓ Conduct class test to assess their understanding
 - ✓ Let the learners carry out activities of the SAMPLE SELF CHECK 2.6 and assess their response

- **Non-contact:**

- ✓ Make the learners read INFORMATION SHEET 2.6 and perform OPERATION SHEET 2.6 and assess the work submitted through google classroom
- ✓ Let the student solve SAMPLE CHECK 2.6 and submit answers through Google Classroom or any other relevant social media platforms. Assess them using a checklist/performance guide.
- ✓ Give add additional relevant questions from other resources (textbook/google/YouTube) and let the learners submit answers through Google Classroom or any other social media platform. Use rubrics to assess their answers.

E. Resources (online and offline):

- ✓ CBLM for class XII
- ✓ Hand-outs

Resources

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