

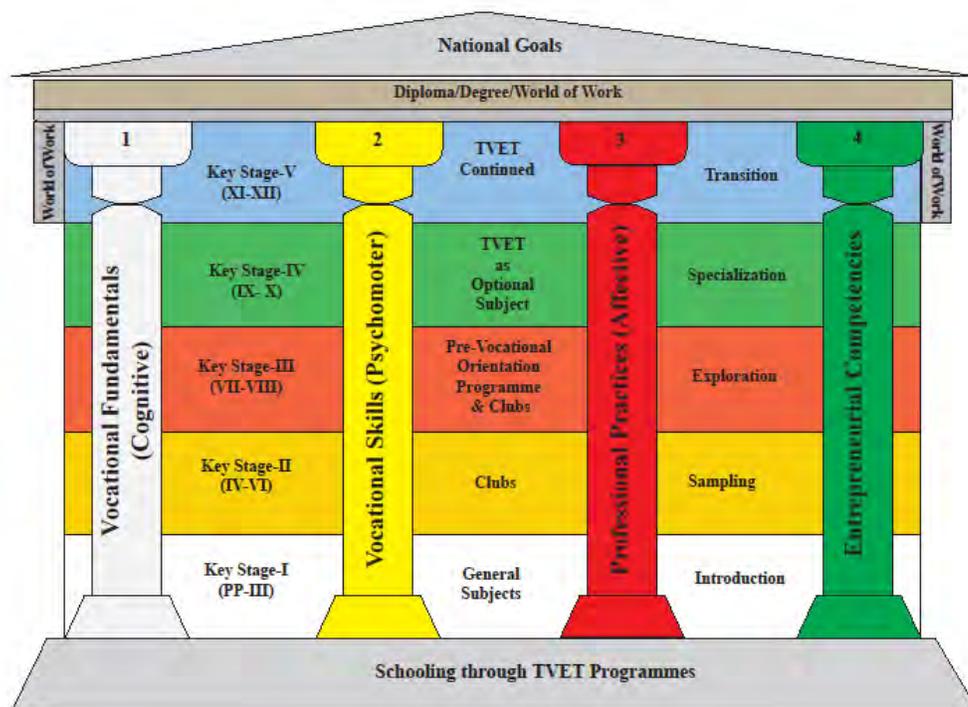
# TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET)

## NEW NORMAL CURRICULUM

### INSTRUCTIONAL GUIDE

(MASONRY)

CLASS: IX



**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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## MODULE 1: PERFORMING BRICK/BLOCK, STONE MASONRY AND PLASTERING

### Chapter 1: Practicing Occupational Health and Safety (OHS)

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

Learning objectives	Core concepts (Chapters/Topics)
1.1.1 Define 5S. 1.1.2 State the purposes of 5S. 1.1.3 Explain the principle of 5S. 1.1.4 Define OHS. 1.1.5 State the importance of OHS. 1.1.6 Explain the rights of an employee. 1.1.7 State the main causes of accidents. 1.1.8 State the safety rules. 1.1.9 Apply the principles of 5S. <i>1.1.10 Ensure appropriate use of PPE.</i> <i>1.1.11 Ensure to refer OHS manual.</i>	<b>1.1 Applying the principles of 5S</b>

#### B. Competencies

- i) Practice OHS procedures in any task for safety.

#### C. Pedagogy/Learning Experiences

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.1.
- ✓ Provide handouts to learners.
- ✓ Make learners read and perform OPERATION SHEET 1.1.
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.1 and provide the additional questions referring to CBLM and other resources-Google/YouTube.

- **Non-contact:**

- ✓ Instruct learners through Google Classroom to read INFORMATION SHEET 1.1 and perform OPERATION SHEET 1.1. (The learners may arrange available tools and materials at home.)
- ✓ Provide handouts to learners through Google Classroom.
- ✓ Provide the web link <https://youtu.be/n9sxq34D9HQ> that explains the principles of 5S.
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.1 and provide the additional questions referring to CBLM and other resources. Ask them to submit through Google Classroom.

#### D. Assessment

- **Contact:**

- ✓ Assess learners' ability to apply the principles of 5S using a rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.1 and the additional questions provided.
- ✓ Provide feedback.

- **Non-contact:**

- ✓ Assess learners' ability to perform OPERATION SHEET 1.1 through a short video send as evidence through Google Classroom.
- ✓ Assess learners' response to SAMPLE SELF CHECK 1.1 and the additional questions provided through Google Classroom.
- ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline):**

- CBLM for Classes IX and X, REC
- Handouts
- <https://youtu.be/n9sxq34D9HQ> (Explanation on principles of 5S)

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

Learning objectives	Core concepts (Chapters/Topics)
1.2.1 Define PPE. 1.2.2 State the importance of PPE. 1.2.3 List the categories of PPE. 1.2.4 Use PPE. 1.2.5 <i>Ensure good care of PPE.</i> 1.2.6 <i>Ensure to wear appropriate PPE.</i> 1.1.12 <i>Ensure not to defective and damaged PPE.</i>	<b>1.2 Using PPE</b>

**B. Competencies**

- i) Practice OHS procedures for safety.

**C. Pedagogy/Learning Experience**

- **Contact:**
  - ✓ Make the learners read INFORMATION SHEET 1.2.
  - ✓ Make the learners read and perform OPERATION SHEET 1.2
  - ✓ Ask learners to solve the SAMPLE SELF CHECK 1.2.
  - ✓ Provide additional questions from CBLM and other resources-Google/YouTube.
- **Non-contact:**
  - ✓ Instruct learners to read INFORMATION SHEET 1.2 and OPERATION SHEET 1.2.
  - ✓ Instruct the learners go through the web link <https://youtu.be/r9vp1q1L2ro> that explains PPE.
  - ✓ Instruct learners to solve the SAMPLE SELF CHECK 1.2.

**D. Assessment**

- **Contact:**
  - ✓ Assess learners' ability to understand the usage of PPE using a rubric.
  - ✓ Assess learners' response to SAMPLE SELF CHECK 1.2 and the additional questions provided.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess learners' response to SAMPLE SELF CHECK 1.2 and the additional questions provided through Google Classroom.
  - ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline):**

- CBLM for Classes IX and X, REC
- <https://youtu.be/r9vp1q1L2ro> (Explanation on PPE)

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

Learning objectives	Core concepts (Chapters/Topics)
<p>1.3.1 Define safety precaution.</p> <p>1.3.2 List the different types of safety</p> <p>1.3.3 Explain workshop and personal safety.</p> <p>1.3.4 State the importance of maintaining a workplace and personal safety.</p> <p>1.3.5 Explain the importance of safety signs and symbols.</p> <p>1.3.6 Explain the Emergency exit.</p> <p>1.3.7 Describe the layout of the workshop.</p> <p>1.3.8 Maintain workplace and personal safety.</p> <p><i>1.3.9 Ensure to follow OHS procedures.</i></p> <p><i>1.3.10 Ensure to keep the workshop clean.</i></p> <p><i>1.3.11 Ensure to ring the alarm bell before the accident spreads over.</i></p> <p><i>1.3.12 Ensure to display safety signs and symbols.</i></p> <p><i>1.3.13 Ensure to use appropriate PPE in the workplace.</i></p> <p><i>1.3.14 Ensure to avoid horseplay at the workplace.</i></p> <p><i>1.3.15 Ensure to avoid smoking and eating inside the workshop.</i></p> <p><i>1.3.16 Ensure to avoid working under influence of alcohol.</i></p>	<p><b>1.3 Maintaining workplace and personal safety</b></p>

## B. Competencies

- i) Practice OHS procedures in any task for safety.

## C. Pedagogy/Learning experience

- **Contact:**

- ✓ Let learners read INFORMATION SHEET 1.3.
- ✓ Make learners read and perform the OPERATION SHEET 1.3.
- ✓ Make learners answer the SAMPLE SELF CHECK 1.3.

- **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 1.3 and OPERATION SHEET 1.3 through Google Classroom.
- ✓ Let the learners explore maintaining a workplace and personal safety following the link <https://www.youtube.com/watch?v=4bkr5lpKGUM> and <https://www.youtube.com/watch?v=WW0U6o1XNec> through Google Classroom.
- ✓ Instruct learners to answer the SAMPLE SELF CHECK 1.3 and send it through Google Classroom.

#### **D. Assessment**

- **Contact:**

- ✓ Assess learners' ability to apply appropriate workplace and personal safety using a rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.3.
- ✓ Provide feedback.

- **Non-contact:**

- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.3 and additional question provided through Google Classroom.
- ✓ Provide feedback through Google Classroom.

#### **E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://www.youtube.com/watch?v=4bkr5lpKGUM> (Video on workplace safety)
- <https://www.youtube.com/watch?v=WW0U6o1XNec> (Video on safety tips)

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

Learning objectives	Core concepts (Chapters/Topics)
1.4.1 Explain tool and equipment safety. 1.4.2 State the importance of maintaining tool and equipment safety. 1.4.3 List the dos and don'ts for tool and equipment safety. 1.4.4 Maintain tools and equipment safety. <i>1.4.5 Ensure all the tools are in workable condition</i> <i>1.4.6 Ensure to keep tools clean and dry and store them properly after use.</i> <i>1.4.7 Ensure to operate the machine when instructed.</i> <i>1.4.8 Ensure to refer manual before the operation of tools and equipment.</i>	<b>1.4 Maintaining tools and equipment safety</b>

### B. Competencies

- i) Practice OHS procedures in any task for safety.
- ii) Maintain hand tools and portable power tools for better performance.

### C. Pedagogy/Learning experience

#### • Contact:

- ✓ Make learners read the INFORMATION SHEET 1.4.
- ✓ Ask learners to read and perform OPERATION SHEET 1.4 on maintaining tools and equipment safety.
- ✓ Make learners solve the SAMPLE SELF CHECK 1.4.

#### • Non-contact:

- ✓ Instruct learners to read the INFORMATION SHEET 1.4 and OPERATION SHEET 1.4.
- ✓ Instruct learners to go through the web link <http://www.ehsdb.com/dos-and-donts--hand-tools-equipments.php> that shows additional DOs and DON'Ts of hand tools.
- ✓ Instruct learners to watch a video on the web link <https://youtu.be/jovscTSq-mg> on tools and equipment safety.
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.4 and submit it through Google Classroom.

### D. Assessment

#### • Contact:

- ✓ Assess learners' ability to maintain tools and equipment safety using a rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.4.
- ✓ Provide feedback.

- **Non-contact:**

- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.4 through Google Classroom.
- ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <http://www.ehsdb.com/dos-and-donts--hand-tools-equipments.php> (Article on Dos and Don'ts of hand tools)
- <https://youtu.be/jovscTSq-mg> (Video on tools and equipment safety)

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

Learning objectives	Core concepts (Chapters/Topics)
1.5.1 Define fire extinguisher. 1.5.2 Label the parts of the fire extinguisher. 1.5.3 Explain the types of fires. 1.5.4 Explain the types of fire extinguishers. 1.5.5 State the methods of combating/extinguishing fires. 1.5.6 Use a fire extinguisher. 1.5.7 <i>Ensure to read the instructions provided on the fire extinguisher.</i> 1.5.8 <i>Ensure appropriate use of PPE.</i>	<b>1.5 Using fire extinguisher</b>

## B. Competencies

- i) Practice OHS procedures for safety.
- ii) Operate and use different types of fire extinguishers to combat a fire.

## C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Make learners read INFORMATION SHEET 1.5.
  - ✓ Make learners read and perform the OPERATION SHEET 1.5 through guided practice.
  - ✓ Make students solve the SAMPLE SELF CHECK 1.5 and conduct a quiz on the classification of fire and types of fire extinguisher.
- **Non-contact**
  - ✓ Ask learners to read INFORMATION SHEET 1.5 and OPERATION SHEET 1.5.
  - ✓ Instruct learners to read the article on the web link <https://www.marsden-fire-safety.co.uk/resources/fire-extinguishers> on the fire extinguisher.
  - ✓ Provide a video link on the PASS system by sharing the web link <https://www.youtube.com/watch?v=PQV71INDaqY> through Google Classroom.
  - ✓ Instruct students to solve the SAMPLE SELF CHECK 1.5 and conduct a quiz on the classification of fire and types of fire extinguisher on Kahoot and Nearpod which will be sent through Google Classroom.
  - ✓ Ask learners to solve the SAMPLE SELF CHECK 1.5 through Google Classroom.

## D. Assessment

- **Contact:**
  - ✓ Assess learners' ability to maintain tools and equipment safety using a rubric.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 1.5.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 1.5.
  - ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://www.marsden-fire-safety.co.uk/resources/fire-extinguishers> (Article on fire extinguishers)
- <https://www.youtube.com/watch?v=PQV71INDaqY> (Video on PASS system)

## Chapter 2: Preparing for Masonry Work

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

Learning objectives	Core concepts (Chapters/Topics)
2.1.1 State the types of tools and their uses. 2.1.2 State the types of materials and their uses. 2.1.3 State the types of equipment and their uses. 2.1.4 Describe the importance of selecting appropriate tools, material, and equipment. 2.1.5 Explain the storage of materials. 2.1.6 Select masonry tools, equipment, and materials. 2.1.7 <i>Ensure appropriate use of PPE.</i>	<b>2.1 Selecting masonry tools, equipment, and materials</b>

### B. Competencies

- i) Practice OHS procedures in any task for safety.
- ii) Select the right tools, materials, and equipment for the right job.

### C. Pedagogy/Learning experience

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 2.1.
- ✓ Make learners store cement bags by stacking properly reading a note 2.1.5 of INFORMATION SHEET 2.1 or watching a video link <https://youtu.be/P-xWRqShzJs> which explains the storage of cement.
- ✓ Make learners read and perform OPERATION SHEET 2.1 by letting learners identify and collect the required list of tools, materials, and equipment from the store.
- ✓ Make learners solve SAMPLE SELF CHECK 2.1 and give the additional questions referring to CBLM and other resources (from the links given below).
- ✓ Conduct a test (quiz, true or false, puzzle or short answer type questions) through Kahoot.

- **Non-contact:**

- ✓ Ask learners to read INFORMATION SHEET 2.1 and OPERATION SHEET 2.1 through Google Classroom.
- ✓ Let learners watch a video referring to a link <https://youtu.be/6oPnO3g32d0> and instruct them to take notes from it in their notebook and send it through Google Classroom or any other social media platforms.
- ✓ Ask learners to watch the link <https://youtu.be/P-xWRqShzJs> for storage of cement.
- ✓ Ask learners refer to the web link <https://gharpedia.com/blog/40-masonry-tools-used-in-masonry-work-of-your-home/> for further explanation on masonry tools and their uses.
- ✓ Instruct learners solve SAMPLE SELF CHECK 2.1 and give additional questions from CBLM and other resources (from the links given above) and instruct them to send their works through Google Classroom or any other resources.
- ✓ Conduct a test (quiz, true or false, puzzle or short answer type questions) using Kahoot through Google Classroom

#### **D. Assessment**

- **Contact:**
  - ✓ Assess the learners' ability to select masonry tools, materials, and equipment using a rubric.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 2.1 and the additional questions provided.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 2.1 and the additional questions provided.
  - ✓ Provide feedback through Google Classroom.

#### **E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://youtu.be/6oPnO3g32d0> (Video on masonry tools and their uses)
- <https://gharpedia.com/blog/40-masonry-tools-used-in-masonry-work-of-your-home/> (Article on masonry tools used in masonry works)
- <https://youtu.be/P-xWRqShzJs> (Video on storage of cement)

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

Learning objectives	Core concepts (Chapters/Topics)
2.2.1 List the different classification of buildings. 2.2.2 Label the parts of building components. 2.2.3 List the utilities and facilities provided in the building. 2.2.4 Identify building components. 2.2.5 <i>Ensure to use appropriate PPE.</i>	<b>2.2 Identifying building components</b>

## B. Competencies

- i) Practice OHS procedures in any task for safety.
- ii) Identify different classes of building, their parts and utilities.

## C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Make learners read INFORMATION SHEET 2.2.
  - ✓ Make a tour around the school with learners and show them the components of a building.
  - ✓ Let learners read and perform OPERATION SHEET 2.2 by drawing themselves.
  - ✓ Make learners solve SAMPLE SELF CHECK 2.2 and provide additional questions referring to CBLM.
  - ✓ Conduct a test (quiz, true or false, puzzle or short answer type questions) through Kahoot.
- **Non-contact:**
  - ✓ Instruct learners to read INFORMATION SHEET 2.2.
  - ✓ Instruct learners to go through the web link <https://youtu.be/s-JeH0iHYlk> which explains the classification of buildings through Google Classroom.
  - ✓ Instruct learners to go through weblink <https://youtu.be/Qftr8EeiMs> to know about components of building through Google Classroom.
  - ✓ Ask learners to read and perform OPERATION SHEET 2.2 and instruct them to submit through Google Classroom.
  - ✓ Instruct learners to solve SAMPLE SELF CHECK 2.2 and provide the additional questions referring to CBLM and send it through Google Classroom.
  - ✓ Conduct a test (quiz, true or false, puzzle or short answer type questions) using Kahoot through Google Classroom.

## D. Assessment

- **Contact:**
  - ✓ Assess learners' ability to identify the building components using a rubric.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 2.2 and additional questions provided.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 2.2 and additional questions provided.

✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://youtu.be/s-JeH0iHYlk> (Video on the classification of buildings)
- <https://youtu.be/Qftr8EeiiMs> (Video on components of the building)

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

Learning objectives	Core concepts (Chapters/Topics)
2.3.1 Define estimating and costing. 2.3.2 State the purposes of estimation. 2.3.3 Name the types of estimation. 2.3.4 Explain two stages of a detailed estimate. 2.3.5 Define Bhutan Schedule of Rate and state its uses. 2.3.6 Describe the unit measurement of work. 2.3.7 Explain the unit conversion of measurement. 2.3.8 Estimate materials. 2.3.9 <i>Ensure to interpret drawing and its specification.</i> 2.3.10 <i>Ensure to use the correct format.</i> 2.3.11 <i>Ensure to use BSR as a reference.</i>	<b>2.3 Estimating materials</b>

### B. Competencies

- i) Interpret drawing and its specification.
- ii) Carry out estimation of any work using BSR.

### C. Pedagogy/Learning experience

#### • Contact:

- ✓ Make learners read INFORMATION SHEET 2.3 of CBLM.
- ✓ Provide handouts with a sample to calculate estimation and costing.
- ✓ Give a simple drawing and instruct learners to perform OPERATION SHEET 2.3 referring to BSR provided in groups.
- ✓ Make learners solve SAMPLE SELF CHECK 2.3 and provide the additional questions referring to CBLM and the link provided below.

#### • Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET 2.3 of CBLM.
- ✓ Share the link <https://www.slideshare.net/thomasjbritto/estimating-andcosting-book> highlighting the topics to go through via Google Classroom.
- ✓ Provide handouts with a sample to calculate estimation and costing through Google Classroom.
- ✓ Give a simple drawing and instruct learners to perform OPERATION SHEET 2.3 referring to BSR provided in pdf (mention the pages to go through) and must submit their work through Google Classroom.
- ✓ Make learners solve SAMPLE SELF CHECK 2.3 and provide the additional questions referring to CBLM and the ebook linked above and instruct them to send it through Google Classroom.

### D. Assessment

#### • Contact:

- ✓ Assess learners' ability to estimate materials using a rubric.

- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.3 and the additional questions provided.
- ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess the learners' ability to estimate materials using a rubric.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 2.3 and the additional questions provided.
  - ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- Handouts
- <https://www.slideshare.net/thomasjbritto/estimating-andcosting-book> (Estimation and Costing book by B.N Suresh)

## Chapter 3: Preparing mortar mix

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

Learning objectives	Core concepts (Chapters/Topics)
3.1.1 Define sand. 3.1.2 List the types of sand. 3.1.3 State the purpose of testing. 3.1.4 Describe the effect of silt content in the sand. 3.1.5 State the reason for using a salt solution. 3.1.6 Discuss the methods of reducing silt content. 3.1.7 Conduct a silt content test. 3.1.8 <i>Ensure to mix sand and water thoroughly.</i> 3.1.9 <i>Ensure proper handling of jar/glass/cylinder.</i> 3.1.10 <i>Ensure to add salt to the solution.</i>	<b>3.1 Conducting a silt content test</b>

### B. Competencies

- i) Practice OHS procedure while experimenting.
- ii) Determine the quality of sand through a silt content test.

### C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Make learners read INFORMATION SHEET 3.1.
  - ✓ Exhibit the silt content test through guided practice following the procedure given in the OPERATION SHEET 3.1.
  - ✓ Make learners perform OPERATION SHEET 3.1.
  - ✓ Make learners solve SAMPLE SELF CHECK 3.1.
- **Non-contact:**
  - ✓ Instruct learners to read INFORMATION SHEET 3.1 from CBLM.
  - ✓ Instruct learners to watch the videos through the link [https://www.youtube.com/watch?v=FmNsa\\_yNy9M/](https://www.youtube.com/watch?v=FmNsa_yNy9M/) / <https://youtu.be/PFmuQjXA6lM> that shows the silt content test for sand through Google Classroom.
  - ✓ Ask learners to read OPERATION SHEET 3.1 through Google Classroom.
  - ✓ Make learners solve SAMPLE SELF CHECK 3.1 and instruct them to send it through Google Classroom.

### D. Assessment

- **Contact:**
  - ✓ Assess the learners' ability to conduct a silt content test using a rubric.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 3.1.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 3.1 through Google Classroom.
  - ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- [https://www.youtube.com/watch?v=FmNsa\\_yNy9M](https://www.youtube.com/watch?v=FmNsa_yNy9M) (Video on silt content test experiment)
- <https://youtu.be/PFmuQjXA6lM> (Video on silt content test experiment)

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

Learning objectives	Core concepts (Chapters/Topics)
3.2.1 Define mortar. 3.2.2 State the function of mortar. 3.2.3 List the uses of mortar. 3.2.4 State the types of mortar. 3.2.5 Identify the tools required for preparing the surface. 3.2.6 State the requirement of the mixing platform. 3.2.7 Prepare the surface. 3.2.8 <i>Ensure appropriate use of PPE.</i> 3.2.9 <i>Ensure the platform is prepared on the levelled ground.</i>	<b>3.2 Preparing the surface</b>

## B. Competencies

- i) Practice OHS procedure while preparing the surface.
- ii) Maintain the cleanliness of the surface for mixing mortar.

## C. Pedagogy/Learning experience

### • Contact:

- ✓ Make learners read INFORMATION SHEET 3.2.
- ✓ Demonstrate the learners prepare the surface at the workplace following the procedure given in OPERATION SHEET 3.2 and make them perform individually.
- ✓ Make learners solve the SAMPLE SELF CHECK 3.2.

### • Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET 3.2 and OPERATION SHEET 3.2.
- ✓ Make a video demonstrating to the learners the preparation of surface at the workplace following the procedure given in OPERATION SHEET 3.2 through Google Classroom.

## D. Assessment

### • Contact:

- ✓ Assess the learners' ability to prepare the surface using a rubric.
- ✓ Assess learners' response to SAMPLE SELF CHECK 3.2.
- ✓ Provide feedback.

### • Non-contact:

- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.2 through Google Classroom.
- ✓ Provide feedback through Google Classroom.

## E. Resources (online and offline)

- CBLM for Classes IX and X, REC
- Video demonstrating the preparation of the surface (Self-made tutorial video).

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

Learning objectives	Core concepts (Chapters/Topics)
3.3.1 State the different types of cement. 3.3.2 State the different types of mix ratios. 3.3.3 Explain the setting time of cement. 3.3.4 List the method of measuring the ingredients. 3.3.5 List the tools required for mixing. 3.3.6 Calculate the total quantity of mortar. 3.3.7 Mix mortar manually. 3.3.8 <i>Ensure appropriate use of PPE</i>	<b>3.3 Mixing mortar manually</b>

## B. Competencies

- i) Practice OHS procedure for safety.
- ii) Prepare manual mortar mixing for various tasks.

## C. Pedagogy/Learning experience

### • Contact:

- ✓ Make learners study the INFORMATION SHEET 3.3.
- ✓ Provide the questions to calculate the total quantity of mortar for brickwork, stonework and plastering work. (Let learners refer to the INFORMATION SHEET 3.3.11)
- ✓ Make learners perform OPERATION SHEET 3.3 in the group.
- ✓ Make learners solve the SAMPLE SELF CHECK 3.3.

### • Non-contact:

- ✓ Instruct learners to study the INFORMATION SHEET 3.3.
- ✓ Instruct learners to go through the web link <https://www.fixmyroof.co.uk/mix-cement-mortar/> and instruct them to read the notes and watch the video that shows the mixing of cement and sand.
- ✓ Instruct learners to read the note on the link [https://www.dcc1.bt/?page\\_id=95](https://www.dcc1.bt/?page_id=95) that explains the types of cement.
- ✓ Instruct learners to read the notes from the web link <https://civiltoday.com/civil-engineering-materials/mortar/65-types-of-mortar> that shows the types of mortar.
- ✓ Provide the questions to calculate the total quantity of mortar for brickwork, stonework, and plastering work and send it through Google Classroom. (Let learners refer to the INFORMATION SHEET 3.3.11)

## D. Assessment

### • Contact:

- ✓ Assess the learners' ability to mix mortar manually using a proper rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.3.
- ✓ Provide feedback.

### • Non-contact:

- ✓ Assess the learners' response to SAMPLE SELF CHECK 3.3.
- ✓ Provide feedback through Google Classroom.

#### **E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://www.fixmyroof.co.uk/mix-cement-mortar/> (Article on mixing cement and sand)
- [https://www.dccl.bt/?page\\_id=95](https://www.dccl.bt/?page_id=95) (Article on types of cement)
- <https://civiltoday.com/civil-engineering-materials/mortar/65-types-of-mortar> (Article on types of mortar)

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

Learning objectives	Core concepts (Chapters/Topics)
3.4.1 Define mixture machine. 3.4.2 State the function of the mixture machine. 3.4.3 Label the parts of the mixture machine. 3.4.4 Identify the types of mixture machine. 3.4.5 Mix mortar mechanically. <b>3.4.6 Operate mixture machine.</b> 3.4.7 <i>Ensure proper operation of mixture machine.</i> 3.4.8 <i>Ensure appropriate use of PPE.</i>	<b>3.4 Mixing mortar mechanically</b>

### B. Competencies

- i) Practice OHS procedure of safety.
- ii) Carry out mechanical mortar mixing professionally where mass quantity is required.

### C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Make learners study the INFORMATION SHEET 3.4.
  - ✓ Make learners read and perform the SKILL SHEET 3.4 and OPERATION SHEET 3.4.
  - ✓ Make learners solve the SAMPLE SELF CHECK 3.4.
- **Non-contact:**
  - ✓ Instruct learners to study the INFORMATION SHEET 3.4 through Google Classroom.
  - ✓ Share learners the video web link <https://youtu.be/w65Ujbx2E9U> to watch how mortar is mixed by mixer machines through Google Classroom.
  - ✓ Instruct learners read the SKILL SHEET 3.4 and OPERATION SHEET 3.4 through Google Classroom.
  - ✓ Make learners solve the SAMPLE SELF CHECK 3.4 of CBLM and submit it through Google Classroom.

### D. Assessment

- **Contact:**
  - ✓ Assess the learners' performance of mixing mortar mechanically using a rubric.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 3.4.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 3.4.
  - ✓ Provide feedback through Google Classroom.

### E. Resources (online and offline)

- CBLM for Classes IX and X, REC
- <https://youtu.be/w65Ujbx2E9U> (Video on mini mixer machine)

## Chapter 4: Performing brick/blocks masonry work

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

Learning objectives	Core concepts (Chapters/Topics)
4.1.1 Define foundation. 4.1.2 State the purpose of a foundation. 4.1.3 Name the different types of foundations. 4.1.4 State the requirement of the foundation. 4.1.5 Define layout and describe its purpose. 4.1.6 List the methods of the layout. 4.1.7 Calculate using Pythagoras theorem to derive the 3,4,5 method. 4.1.8 State the terminologies used in a layout. 4.1.9 Explain the 3,4,5 method of foundation layout. 4.1.10 Carry out the foundation layout. <b>4.1.11 Use a water level pipe.</b> 4.1.12 Ensure appropriate use of PPE. 4.1.13 Ensure proper handling of water level pipe.	<b>4.1 Carrying out foundation layout</b>

### B. Competencies

- i) Practice OHS procedure for safety.
- ii) Carryout foundation layout as per the requirement.

### C. Pedagogy/Learning experience

#### • Contact:

- ✓ Make learners study the INFORMATION SHEET 4.1.
- ✓ Make learners read and perform SKILL SHEET 4.1 on using water level pipe.
- ✓ Make learners read and perform OPERATION SHEET 4.1 on carrying out foundation layout in groups through guided practice.
- ✓ Make learners solve the SAMPLE SELF CHECK 4.1 and provide additional questions.

#### • Non-contact:

- ✓ Instruct learners to study the INFORMATION SHEET 4.1 through Google Classroom.
- ✓ Instruct learners to read the notes about the types of foundations sharing the link <https://theconstructor.org/geotechnical/foundation-types-and-uses/9237/> through Google Classroom.
- ✓ Instruct learners to watch the web link <https://youtu.be/XPbWIp56zxY> that shows the process of setting out through Google Classroom.
- ✓ Instruct learners to read SKILL SHEET 4.1 on using water level pipe.
- ✓ Instruct learners to read OPERATION SHEET 4.1 on carrying out foundation layout. Instruct learners to solve the SAMPLE SELF CHECK 4.1 and provide additional questions and submit their answers through Google Classroom.

### D. Assessment

#### • Contact:

- ✓ Assess learners' ability to carry out foundation layout using a rubric.

- ✓ Assess learners' response to SAMPLE SELF CHECK 4.1 and the additional questions provided.
- ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 4.1 and the additional questions provided.
  - ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://theconstructor.org/geotechnical/foundation-types-and-uses/9237/> (Article on types of foundation)
- <https://youtu.be/XPbWIp56zxY> (Video on setting out)

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

Learning objectives	Core concepts (Chapters/Topics)
4.2.1 Define brick masonry. 4.2.2 State the types of brick. 4.2.3 Classify different classes of bricks. 4.2.4 Label the Parts of brick. 4.2.5 State the properties of brick. 4.2.6 State the importance of soaking the bricks. 4.2.7 Explain the different types of field tests for brick. 4.2.8 State the purpose of the compressive strength test. 4.2.9 Conduct a compressive test for bricks. 4.2.10 <i>Operate a compressive testing machine.</i> 4.2.11 <i>Ensure proper handling of the machine.</i> 4.2.12 <i>Ensure appropriate use of PPE.</i> 4.2.13 <i>Ensure to use 2 mm plywood.</i>	<b>4.2 Conducting a compressive test for bricks</b>

### B. Competencies

- i) Practice OHS procedure at all times for safety.
- ii) Conduct a compressive test for different classes of bricks.

### C. Pedagogy/Learning experience

#### • Contact:

- ✓ Make learners study the INFORMATION SHEET 4.2.
- ✓ Explain the parts and functions of the compressive testing machine to the learners in a lab.
- ✓ Make learners read and perform SKILL SHEET 4.2 on operating compressive testing machine through demonstration.
- ✓ Make learners read and perform OPERATION SHEET 4.2 on conducting compressive testing machine through demonstration and guided practice.
- ✓ Make learners answer SAMPLE SELF CHECK 4.2 and provide additional questions.

#### • Non-contact:

- ✓ Instruct learners to study the INFORMATION SHEET 4.2 through Google Classroom.
- ✓ Share the web link <https://www.civilengineerspk.com/classification-of-bricks/> about the classification of bricks through Google Classroom and instruct learners to read it.
- ✓ Instruct learners to read the web link <https://dailycivil.com/brick-tests/> about the field test of bricks through Google Classroom.
- ✓ Instruct learners to read SKILL SHEET 4.2 on operating the compressive testing machine.

- ✓ Instruct learners to read OPERATION SHEET 4.2 on conducting compressive testing machine and share the web link [https://youtu.be/QZSYS932\\_Lo](https://youtu.be/QZSYS932_Lo) that explains about compressive testing machine through Google Classroom.
- ✓ Make learners answer SAMPLE SELF CHECK 4.2 and provide additional questions through Google Classroom.

#### **D. Assessment**

- **Contact:**

- ✓ Assess learners' ability to operate the compressive testing machine and conducting a compressive strength test for brick using rubrics.
- ✓ Assess learners' response to SAMPLE SELF CHECK 4.2 and the additional questions provided.
- ✓ Provide feedback.

- **Non-contact:**

- ✓ Assess learners' response to SAMPLE SELF CHECK 4.2 and the additional questions provided.
- ✓ Provide feedback through Google Classroom.

#### **E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://www.civilengineersp.com/classification-of-bricks/> (Article on the classification of bricks)
- <https://dailycivil.com/brick-tests/> (Article on a field test of bricks)
- [https://youtu.be/QZSYS932\\_Lo](https://youtu.be/QZSYS932_Lo) (Video on the compressive testing machine)

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

Learning objectives	Core concepts (Chapters/Topics)
4.3.1 List the types of bats/closure. 4.3.2 Explain the importance of soaking the brick before cutting. 4.3.3 Describe the methods of cutting the bricks. 4.3.4 Cut bricks. 4.3.5 <i>Ensure appropriate use of PPE.</i> 4.3.6 <i>Ensure proper handling of cutting tools.</i>	<b>4.3 Cutting brick</b>

## B. Competencies

- i) Practice OHS procedure at all times for safety.
- ii) Cut brick of different types into a required shape.

## C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Make learners study the INFORMATION SHEET 4.3.
  - ✓ Make learners read and perform OPERATION SHEET 4.3.
  - ✓ Make learners answer the SAMPLE SELF CHECK 4.3.
- **Non-contact:**
  - ✓ Instruct learners to study the INFORMATION SHEET 4.3 and read the OPERATION SHEET 4.3 through Google Classroom.
  - ✓ Instruct learners to read the web link <http://civilengworks.blogspot.com/2017/09/different-types-of-brick-cuts-used-in.html?m=1> that explains different types of brick cuts through Google Classroom.
  - ✓ Instruct learners to watch the video of the web link <https://youtu.be/oA0gxRjKvVs> that shows how to cut bricks through Google Classroom.
  - ✓ Make learners answer the SAMPLE SELF CHECK 4.3.

## D. Assessment

- **Contact:**
  - ✓ Assess learners' ability to cut bricks using a rubric.
  - ✓ Assess learners' response to SAMPLE SELF CHECK 4.3.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess learners' response to SAMPLE SELF CHECK 4.3.
  - ✓ Provide feedback through Google Classroom.

## E. Resources (online and offline)

- CBLM for Classes IX and X, REC
- <https://youtu.be/oA0gxRjKvVs> (Tutorial on cutting brick)
- <http://civilengworks.blogspot.com/2017/09/different-types-of-brick-cuts-used-in.html?m=1> (Article on types of brick cuts)

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

Learning objectives	Core concepts (Chapters/Topics)
4.4.1 List the types of brick bonds. 4.4.2 Differentiate between the bonded and unbounded wall. 4.4.3 Describe the orientation of bricks. 4.4.4 Define the stretcher bond. 4.4.5 State the application of stretcher bond. 4.4.6 Explain the technical terms for brick masonry. 4.4.7 Calculate the quantity of bricks. 4.4.8 Lay stretcher bond. 4.4.9 <i>Ensure appropriate use of PPE.</i> 4.4.10 <i>Ensure proper handling of cutting tools.</i>	<b>4.4 Laying stretcher bond</b>

## B. Competencies

- i) Practice OHS procedure at all times for safety.
- ii) Construct a stretcher bond wall as per the requirement.

## C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Make learners read the INFORMATION SHEET 4.4.
  - ✓ Make a quiz via Kahoot or Nearpod on the orientation of brick, stretcher bond wall, and technical terms used in brick masonry.
  - ✓ Provide learners with the questions to calculate the quantity of bricks required for different volumes of a wall.
  - ✓ Make learners read and perform OPERATION SHEET 4.4 of CBLM on laying a stretcher bond wall through demonstration.
  - ✓ Make learners answer the SAMPLE SELF CHECK 4.4.
- **Non-contact:**
  - ✓ Instruct learners to read the INFORMATION SHEET 4.4.
  - ✓ Conduct a quiz via Kahoot or Nearpod on the orientation of brick, stretcher bond wall, and technical terms used in brick masonry through Google Classroom.
  - ✓ Provide learners with the questions to calculate the quantity of bricks required for different volumes of a wall and instruct them to send it through Google Classroom.
  - ✓ Instruct learners to watch a video that shows how to lay a stretcher bond wall from the web link <https://youtu.be/qZGOYS2qteQ> through Google Classroom.
  - ✓ Instruct learners to answer the SAMPLE SELF CHECK 4.4 through Google Classroom.

## D. Assessment

- **Contact:**
  - ✓ Assess the learners' ability to lay a stretcher bond wall using the rubric.
  - ✓ Assess the learners' response to the SAMPLE SELF CHECK 4.4.
  - ✓ Provide feedback.

- **Non-contact:**
  - ✓ Assess the learners' response to the SAMPLE SELF CHECK 4.4.
  - ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://youtu.be/qZGOYS2qteQ> (Video on laying stretcher bond wall)

# ENGINEERING DRAWING

## MODULE: INTERPRETING ENGINEERING DRAWING

### Chapter 1: Interpreting Basic Engineering Drawing

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

Learning objectives	Core concepts (Chapters/Topics)
1.1.1 Define Engineering Drawing. 1.1.2 State the purposes of engineering drawing. 1.1.3 List the types and uses of drawing instruments. 1.1.4 List the sizes of drawing papers. 1.1.5 Use drawing instruments. 1.1.6 <i>Ensure proper handling of drawing instruments.</i> 1.1.7 <i>Ensure proper disposal of waste.</i>	<b>1.1 Using drawing instruments</b>

#### B. Competencies:

- i) Carry out basic engineering drawing.
- ii) Handle drawing instruments properly.

#### C. Pedagogy/Learning Experiences

- **Contact:**

- ✓ Make learners read INFORMATION SHEET 1.1.
- ✓ Show the real instruments to the learners which are required for the drawing.
- ✓ Make learners read and perform OPERATION SHEET 1.1 through guided practice.
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.1.

- **Non-contact:**

- ✓ Share the web link <https://youtu.be/0Q6QwvtjVm8/> / [https://youtu.be/kLe\\_brmh774](https://youtu.be/kLe_brmh774) with the learners to know more about drawing instrument and their uses.
- ✓ Instruct learners to read INFORMATION SHEET 1.1 and OPERATION SHEET 1.1 through Google Classroom.
- ✓ Instruct learners to solve the SAMPLE SELF CHECK 1.1 and send it through Google Classroom.

#### D. Assessment:

- **Contact:**

- ✓ Assess learners' ability to use drawing instrument using a rubric.
- ✓ Assess learners' response to the SAMPLE SELF CHECK 1.1.
- ✓ Provide feedback.

- **Non-contact:**

- ✓ Assess learners' response to the SAMPLE SELF CHECK 1.1.
- ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline):**

- CBLM for Classes IX and X, REC
- <https://youtu.be/0Q6QwvtjVm8> / [https://youtu.be/kLe\\_brmh774](https://youtu.be/kLe_brmh774) (Video on drawing instruments and their uses)

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

Learning objectives	Core concepts (Chapters/Topics)
1.2.1 Define the layout of a drawing sheet. 1.2.2 Define the title block. 1.2.3 Layout drawing sheet. 1.2.4 <i>Ensure to maintain cleanliness and neatness of drawing.</i> 1.2.5 <i>Ensure proper handling of drawing instruments.</i> 1.2.6 <i>Ensure that the sheet edges are not damaged while handling the drawing.</i>	<b>1.2 Laying out drawing sheet</b>

**B. Competencies**

- i) Carry out basic engineering drawing.
- ii) Layout the drawing sheet properly.

**C. Pedagogy/Learning Experience**

- **Contact:**

- ✓ Make the learners read INFORMATION SHEET 1.2.
- ✓ Ask learners to read and perform OPERATION SHEET 1.2 through guided practice.
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.2.

- **Non-contact:**

- ✓ Instruct the learners to read INFORMATION SHEET 1.2 through Google Classroom.
- ✓ Share the web link <https://youtu.be/FzMPAiW8O-s> with the learners that show the drawing sheet layout.
- ✓ Ask learners to read and perform OPERATION SHEET 1.2 in A4 size paper and submit it through Google Classroom.

**D. Assessment:**

- **Contact:**

- ✓ Assess learners' ability to draw the layout and title block of the drawing sheet using a rubric.
- ✓ Assess learners' response to the SAMPLE SELF CHECK 1.2.
- ✓ Provide feedback.

- **Non-contact:**

- ✓ Instruct learners to solve the SAMPLE SELF CHECK 1.2 and submit it through Google Classroom. Assess learners' response to the SAMPLE SELF CHECK 1.2.
- ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline):**

- CBLM for Classes IX and X, REC
- <https://youtu.be/FzMPAiW8O-sh> (Video on drawing a layout sheet)

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

Learning objectives	Core concepts (Chapters/Topics)
1.3.1 Define a sign and symbol. 1.3.2 Define abbreviation. 1.3.3 Draw engineering sign, symbol, and abbreviations. 1.3.4 Interpret engineering sign, symbols, and abbreviation. 1.3.5 <i>Ensure to maintain cleanliness and neatness of drawing.</i> 1.3.6 <i>Ensure proper handling of drawing instruments.</i>	<b>1.3 Interpreting engineering sign, symbols, and abbreviation</b>

## B. Competencies

- i) Carry out basic engineering drawing.
- ii) Handle the drawing instruments properly.

## C. Pedagogy/Learning experience

### • Contact:

- ✓ Make learners read INFORMATION SHEET 1.3.
- ✓ Make learners read and perform the OPERATION SHEET 1.3 ensuring the proper handling of drawing instruments.
- ✓ Make learners answer the SAMPLE SELF CHECK 1.3.

### • Non-contact:

- ✓ Instruct learners to read INFORMATION SHEET 1.3 through Google Classroom.
- ✓ Share the video link <https://youtu.be/MfNoq0y1LLY> that shows the convention of materials through Google Classroom.
- ✓ Instruct learners to read OPERATION SHEET 1.3 through Google Classroom.
- ✓ Instruct learners answer the SAMPLE SELF CHECK 1.3 and submit it through Google Classroom.

## D. Assessment

### • Contact:

- ✓ Assess learners' ability to draw engineering signs, symbols, and abbreviations using a rubric.
- ✓ Assess learners' response to the SAMPLE SELF CHECK 1.3.
- ✓ Provide feedback.

### • Non-contact:

- ✓ Assess learners' response to the SAMPLE SELF CHECK 1.3.
- ✓ Provide feedback through Google Classroom.

## E. Resources (online and offline)

- CBLM of Classes IX and X, REC
- <https://youtu.be/MfNoq0y1LLY> (Video on the convention of materials)

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

Learning objectives	Core concepts (Chapters/Topics)
1.4.1 Define line. 1.4.2 State the types of line and their application. 1.4.3 Draw different types of lines. 1.4.4 <i>Ensure proper handling of drawing instrument.</i> 1.4.5 <i>Ensure to maintain cleanliness and neatness of drawing.</i>	<b>1.4 Drawing different types of lines</b>

## B. Competencies

- i) Carry out basic engineering drawing.
- ii) Draw different types of lines as per their application.

## C. Pedagogy/Learning experience

### • Contact:

- ✓ Make learners read the INFORMATION SHEET 1.4.
- ✓ Make learners read and perform OPERATION SHEET 1.4.
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.4.

### • Non-contact:

- ✓ Instruct learners read the INFORMATION SHEET 1.4 through Google Classroom.
- ✓ Share the video links <https://youtu.be/SaOoKpLBfYo> and <https://youtu.be/E6OXZ9OHPVk> that describe the types of line.
- ✓ Instruct students to read and perform OPERATION SHEET 1.4 through Google Classroom.
- ✓ Instruct learners to solve the SAMPLE SELF CHECK 1.4 and submit it through Google Classroom.

## D. Assessment

### • Contact:

- ✓ Assess learners' ability to draw types of the line using a rubric.
- ✓ Assess learners' response to the SAMPLE SELF CHECK 1.4.
- ✓ Provide feedback.

### • Non-contact:

- ✓ Assess learners' response to the SAMPLE SELF CHECK 1.4.
- ✓ Provide feedback through Google Classroom.

## E. Resources (online and offline)

- CBLM for Classes IX and X, REC
- <https://youtu.be/SaOoKpLBfYo> / <https://youtu.be/E6OXZ9OHPVk> (Video on types of the line)

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

Learning objectives	Core concepts (Chapters/Topics)
1.5.1 Define lettering and numbering. 1.5.2 Classify the styles of letters. 1.5.3 List the types of letters. 1.5.4 Define freehand lettering. 1.5.5 List the sizes of letters. 1.5.6 State the rules for lettering and numbering. 1.5.7 Draw letters and numbers. 1.5.8 <i>Ensure proper handling of drawing instruments.</i> 1.5.9 <i>Ensure to maintain cleanliness and neatness of drawing.</i>	<b>1.5 Drawing letters and numbers</b>

### B. Competencies

- i) Carry out basic engineering drawing.
- ii) Draw letters and numbers as per standard.

### C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Make learners read INFORMATION SHEET 1.5.
  - ✓ Make learners draw lettering and numbering reading the procedure OPERATION SHEET 1.5.
  - ✓ Make students solve the SAMPLE SELF CHECK 1.5.
- **Non-contact**
  - ✓ Instruct learners read INFORMATION SHEET 1.5 through Google Classroom.
  - ✓ Provide a video link <https://youtu.be/onJIaSAkiEs> on lettering in engineering drawing.
  - ✓ Provide a link to read an article <http://ednotebook.hostgator.co.in/basics-of-engineering-drawing> on basic of engineering drawing.
  - ✓ Instruct learners to read and perform the OPERATION SHEET 1.5 on A4 size paper and submit it through Google Classroom.
  - ✓ Instruct learners to solve the SAMPLE SELF CHECK 1.5 and submit it through Google Classroom.

### D. Assessment

- **Contact:**
  - ✓ Assess learners' ability to perform OPERATION SHEET 1.5 on drawing letters and numbers using a rubric.
  - ✓ Assess learners' response to the SAMPLE SELF CHECK 1.5.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Assess learners' response to the SAMPLE SELF CHECK 1.5.
  - ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <http://ednotebook.hostgator.co.in/basics-of-engineering-drawing> (Article on basic of engineering drawing)
- <https://youtu.be/onJlaSAkiEs> (Video on lettering in engineering)

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

Learning objectives	Core concepts (Chapters/Topics)
1.6.1 Define dimensioning. 1.6.2 State the types of dimensioning. 1.6.3 Explain the system of dimensioning. 1.6.4 State the terminologies of dimensions. 1.6.5 State the rules for dimensioning. 1.6.6 Provide dimensions. 1.6.7 <i>Ensure to maintain cleanliness and neatness of drawing.</i> 1.6.8 <i>Ensure proper handling of drawing instruments.</i>	<b>1.6 Providing dimensions</b>

## B. Competencies

- i) Carry out basic engineering drawing.
- ii) Provide dimensions as per the standard.

## C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Make learners read INFORMATION SHEET 1.6.
  - ✓ Make learners read and perform OPERATION SHEET 1.6.
  - ✓ Make students solve the SAMPLE SELF CHECK 1.6.
  - ✓ Conduct a class test covering the LESSONS 1.1 to 1.6.
- **Non-contact**
  - ✓ Instruct learners read INFORMATION SHEET 1.6 of CBLM through Google Classroom.
  - ✓ Share a video link <https://youtu.be/XS0lJsmY-qg> to know more about the [dimensioning system in engineering drawing](#).
  - ✓ Instruct learners to read and perform OPERATION SHEET 1.6 of CBLM in A4 size paper and submit it through Google Classroom.
  - ✓ Conduct a class test through Google Classroom covering the LESSONS 1.1 to 1.6.

## D. Assessment

- **Contact:**
  - ✓ Assess learners' ability to perform OPERATION SHEET 1.6 on providing dimension to drawing using a rubric.
  - ✓ Assess learners' response to the SAMPLE SELF CHECK 1.6.
  - ✓ Assess learners' performance on a class test conducted.
  - ✓ Provide feedback.
- **Non-contact:**
  - ✓ Instruct learners to solve the SAMPLE SELF CHECK 1.6 and submit it through Google Classroom.
  - ✓ Assess learners' response to the SAMPLE SELF CHECK 1.6.
  - ✓ Assess learners' performance on a class test conducted.
  - ✓ Provide feedback through Google Classroom.

**E. Resources (online and offline)**

- CBLM for Classes IX and X, REC
- <https://youtu.be/XS0lJsmg-gg> (Video on the dimensioning system in engineering drawing)

## **RESOURCES**

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