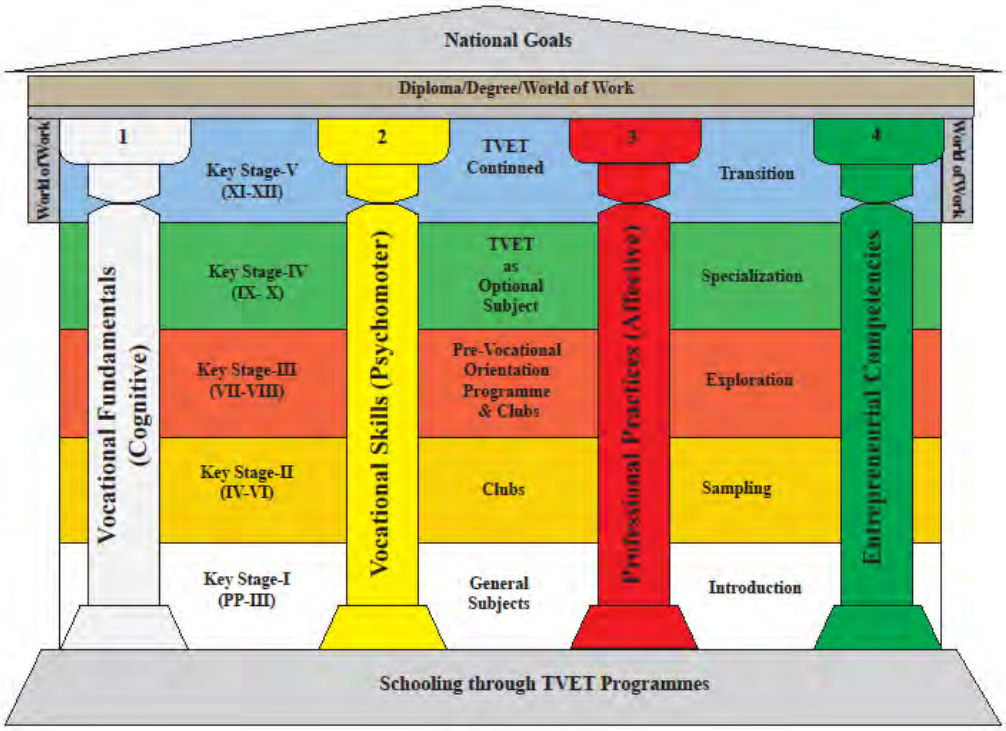
TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET)

NEW NORMAL CURRICULUM

INSTRUCTIONAL GUIDE

(WELDING)

CLASS: XI



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Tel: +975-8-271226
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Advisors
i. Kinga Dakpa, Director General, Royal Education Council, Paro
ii. Wangpo Tenzin, Dean, Curriculum Specialist, REC, Paro

Researchers and writers
i. Lal Maya Shyangdan, Assistant Instructor, Khuruthang MSS, Punakha
ii. Tashi Wangmo, Assistant Instructor, Punakha HSS, Punakha
iii. Kinley Namgyal, Specialist, REC, Paro

Layout Designer
Tashi Zangpo, REC, Paro

ISBN …….

FOREWORD

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

Chapter 3: Carry out arc welding

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

Learning objectives	Core Concepts(Chapters/Topics)
3.1.1 Explain different metal joining methods 3.1.2 Describe T-Joint 3.1.3 Explain the types of weld. 3.1.4 Describe the nomenclature of fillet weld 3.1.5 Describe the nomenclature groove weld 3.1.6 Describe the types of weld pass 3.1.7 Explain the application of T-joint in all positions. 3.1.8 Weld T-joint in all positions. *3.1.9 Ensure proper handling of electrode and electrode holder.* *3.1.10 Ensure appropriate use of PPE.*	**3.9 Welding T-joint in all positions**

B. Competencies:

i. Weld Tee joint in all positions as per the job requirement.

C. Pedagogy/Learning Objectives:

- **Contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.1.
  - ✓ Share the web link https://youtu.be/tAriwVak8Fk to understand the techniques to perform Tee joint in different position.
  - ✓ Demonstrate the techniques to weld the Tee joint in all position
  - ✓ Let the learners perform OPERATION SHEET 3.1 in a group followed by individual practices.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.1.
  - ✓ Provide online content article or handouts

- **Non-contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.1 and read OPERATION SHEET 3.1.
  - ✓ Let the learners explore the web link https://youtu.be/tAriwVak8F on techniques to weld the Tee joint in all positions.
  - ✓ Using the information from the videos, let the learners take notes on the different techniques to weld the Tee joint in all positions.
  - ✓ Based on the information gathered, let the learner develop a model of Tee joint using any available materials.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.1
  - ✓ Provide online content article or handouts

D. Assessment

- **Contact:**
  - ✓ Assess the learners' ability to weld the Tee joint and learners' conceptual understanding of the Tee joint using the checklist.
  - ✓ Let the learners' solve SAMPLE SELF CHECK 3.1.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.1.

- **Non-contact:**
  - ✓ Assess the learners' conceptual understanding and techniques on welding Tee joint using a rubric while the learners demonstrate the techniques to develop the model.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.1 uploaded through Google Classroom.

E. Resources(Online and offline)

- Competency-Based Learning Materials for Class XI
- Handout
- https://youtu.be/tAriwVak8Fk (Explanation on the techniques to weld the TEE joint)

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

Learning Objectives	Core concepts(Chapters/Topics)
3.2.1 Describe the corner joint. 3.2.2 State the purpose of the root gap. 3.2.3 Explain the application of the corner joint in all positions. 3.2.4 State the difference between back welding and backing weld 3.2.5 Weld corner joint in all positions *3.2.6 Ensure proper handling of electrode and electrode holder.* 3.2.7 *Ensure appropriate use of PPE.*	**3.10 Welding corner joint in all positions**

B. Competencies:

i. Weld corner joint in all positions as per the job requirement.

C. Pedagogy/Learning Experiences

- **Contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.2.
  - ✓ Share web link https://youtu.be/y-T8Xl3eaTs to understand the techniques to weld corner joint in a different position.
  - ✓ Demonstrate the techniques to weld the corner joint in all positions.
  - ✓ Let the learners perform OPERATION SHEET 3.2 in a group followed by individual practices.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.2.

- **Non-contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.1 and read OPERATION SHEET 3.1.
  - ✓ Let the learners explore the web link https://youtu.be/y-T8Xl3eaTs on techniques to weld the corner joint in all positions.
  - ✓ Using the information from the videos, let the learners take notes on the different techniques to weld the corner joint.
  - ✓ Based on the information gathered, let the learner develop a model of corner joint using any available materials.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.2.

D. Assessment

- **Contact:**
  - ✓ Assess the learner's ability to weld the corner joint and the learner's conceptual understanding of the corner joint using a checklist.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.2.
  - ✓ Provide necessary intervention and feedback.

- **Non-contact:**
  - ✓ Use rubrics to assess the learner's conceptual understanding of the corner joint.
  - ✓ Provide necessary intervention to the learners based on the learner's achievement derived using rubrics.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.2 uploaded in Google Classroom.

F. Resources(Online and offline):

- Competency-Based Learning Materials for Class XI
- https://youtu.be/y-T8Xl3eaTs (Explanation on the techniques to weld the corner joint)

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

Learning objectives	Core Concepts(Chapters/Topics)
3.3.1 Describe the flange joint. 3.3.2 Describe the mode of metal transfer 3.3.3 Explain the application of the flange joints in all positions. 3.3.4 Weld flange joint in all positions 3.3.5 *Ensure proper handling of electrode and electrode holder.* 3.3.6 *Ensure appropriate use of PPE.*	**3.11 Welding flange joint in all positions**

B. Competencies:

i. Weld flange joint in all positions as per the job requirement.

C. Pedagogy/Learning Experiences

- **Contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.3.
  - ✓ Share web links https://youtu.be/I8wGJhigo-c and https://youtu.be/L7W7bA6xBqA to understand the flange weld joint in horizontal and overhead position.
  - ✓ Demonstrate the techniques to weld the flange joint in all positions.
  - ✓ Let the learners perform OPERATION SHEET 3.3 in a group followed by individual practices.
  - ✓ Provide online content articles or handouts.
  - ✓ Let the learners solve SAMPLE SELF CHECK3.3.

- **Non-contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.3 and read OPERATION SHEET 3.3.
  - ✓ Let the learners explore the web link https://youtu.be/I8wGJhigo-c and https://youtu.be/L7W7bA6xBqAon techniques to weld the flange joint in the horizontal and overhead position.
  - ✓ Using the information from the videos, let the learners take notes on the different techniques to weld the flange joint and its application.
  - ✓ Based on the information gathered, let the learner develop a model of flange joint using any available materials.
  - ✓ Provide online content articles or handouts.
  - ✓ Let the learners solve SAMPLE SELF CHECK3.3.

D. Assessment

- **Contact:**
  - ✓ Assess the learner's ability to weld the flange joint in a different position and the learner's conceptual understanding of the flange joint using a checklist.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 3.3.

- **Non-contact:**
  - ✓ Assess the learners' conceptual understanding and techniques on welding flange joint using a rubric while the learners demonstrate the techniques to develop the model.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.3 uploaded in Google Classroom.

E. Resources(Online and offline):

- Competency-Based Learning Materials for Class XI
- Handout
- https://youtu.be/I8wGJhigo-c (Explanation on the horizontal position of flange joint)
- https://youtu.be/L7W7bA6xBqA (Explanation on the overhead position of flange joint)

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

Learning Objectives	Core concepts(Chapters/Topics)
3.4.1 Describe the pipe joint. 3.4.2 Explain the pipe welding positions (1G/2G/5G/6G). 3.4.3 State the advantages and disadvantages of pipe welding. 3.4.4 Explain the types of pipe joints 3.4.5 Perform pipe welding in all positions 3.4.6 *Ensure proper handling of electrode and electrode holder.* 3.4.7 *Ensure appropriate use of PPE.*	**3.12 Performing pipe welding in all positions**

B. Competencies:

i. Perform pipe welding in all positions as per the job requirement.

C. Pedagogy/Learning experiences

- **Contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.4.
  - ✓ Let the learners explore the following web links:
    https://youtu.be/I8wGJhigo-c
    https://youtu.be/L7W7bA6xBqA.
    https://youtu.be/cGoybWZjSis to understand the pipe welding in 2G, 5G, and 6G positions.
  - ✓ Demonstrate the techniques to weld the pipe in all positions.
  - ✓ Let the learners perform OPERATION SHEET 3.4 in a group followed by individual practices.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.4.

- **Non-contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.4 and read OPERATION SHEET 3.4.
  - ✓ Let the learners explore the following web links:
    https://youtu.be/I8wGJhigo-c
    https://youtu.be/L7W7bA6xBqA.
    https://youtu.be/cGoybWZjSis to understand the pipe welding in 2G, 5G, and 6G positions.
  - ✓ Using the information from the videos, let the learners take notes on the techniques to weld the pipe in different positions and its application.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.4.

D. Assessment

- **Contact:**
  - ✓ Assess the learner's ability to weld the pipe joint and the learner's conceptual understanding of the pipe welding using rubrics.
  - ✓ Assess the learners' performance referring to OPERATION SHEET 3.4.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.4.

- **Non-contact:**
  - ✓ Assess the learners' ability to weld the pipe joint and the learner's conceptual understanding of the pipe welding using rubrics.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.4.

E. Resources(Online and offline):

- Competency-Based Learning Materials for Class XI
- https://youtu.be/ZvTA9UzZpuo (Explanation on the horizontal position- 2G of pipe welding)
- https://youtu.be/vZCXNzq237s (Explain the overhead position of pipe welding 5G position).
- https://youtu.be/cGoybWZjSis (Explains the vertical position in pipe welding 6G)

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

Learning objectives	Core concepts(Chapters/Topics)
3.5.1 Explain the importance of surface cleaning 3.5.2 Describe the technique of surface cleaning 3.5.3 State the types of penetrant test 3.5.4 Define liquid penetrant test 3.5.5 Describe the purpose of the liquid penetrant test 3.5.6 Describe the set of liquid penetrant kits 3.5.7 Explain the principle of the liquid penetrant test 3.5.8 Describe the types of indication 3.5.9 Perform the liquid penetrant test. 3.5.10 *Ensure to avoid DPT when job piece is in hot condition* 3.5.11 *Ensure appropriate use of PPE*	**3.13 Performing liquid penetrant test**

B. Competencies:

i. Perform penetrant test for all the welds.

C. Pedagogy/Learning experiences

- **Contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.5.
  - ✓ Share the web link https://youtu.be/bHTRmTQDZzg to explore a liquid penetrant test.
  - ✓ Demonstrate how to perform a liquid penetrant test.
  - ✓ Let the learners perform OPERATION SHEET 3.5 practice in a group.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.4.

- **Non-contact:**
  - ✓ Let the learners read the INFORMATION SHEET 3.4 and read OPERATION SHEET 3.4.
  - ✓ Let the learners explore the web link https://youtu.be/bHTRmTQDZzg to explore on a liquid penetrant test.
  - ✓ Using the information from the videos, let the learners take notes on the solvents used and how liquid penetrant testing is performed.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.5.

D. Assessment

- **Contact:**
  - ✓ Assess the learner's ability to perform the liquid penetrant test and understand the testing of welds using a checklist and rubrics.
  - ✓ Assess the learners' performance referring to OPERATION SHEET 3.5.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.5.

- **Non-contact:**
  - ✓ Assess the learner's ability to perform the liquid penetrant test and understand the testing of welds using a checklist and rubrics.
  - ✓ Conduct a quiz to assess the conceptual understanding and application of welds testing through Google Classroom.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.5 uploaded in Google Classroom.

E. Resources (Online and offline):

- Competency-Based Learning Materials for Class XI
- https://youtu.be/bHTRmTQDZzg (Explanations on liquid penetrant test)

MODULE 1: INTERPRETING ENGINEERING DRAWING

Chapter 3: Interpreting technical drawing

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

Learning objectives	Core concepts (Chapters/topics)
3.1.1 Describe sectional views. 3.1.2 Describe auxiliary views. 3.1.3 Draw isometric views for the different joints. 3.1.4 *Ensure clean and neatness of drawing.* 3.1.5 *Ensure Proper handling of drawing instruments.*	**3.1 Drawing isometric views for different joint**

B. Competencies:

i. Draw isometric views, orthographic projections, and mechanical machine parts

C. Pedagogy/Learning experiences

- **Contact:**
  - ✓ Let the learners read INFORMATION SHEET 3.1.
  - ✓ Share the web links https://youtu.be/0x4Mq3plkEw and https://youtu.be/vZbrcAGOB_o to understand how sectional view and auxiliary views are drawn.
  - ✓ Let the learner performs OPERATION SHEET 3.1 individually.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.1.
  - ✓ Give additional problem-solving questions.

- **Non-contact:**
  - ✓ Let the learners read INFORMATION SHEET 3.1.
  - ✓ Share the web links https://youtu.be/0x4Mq3plkEw and https://youtu.be/vZbrcAGOB_o to understand how sectional view and auxiliary views are drawn.
  - ✓ Let the learner performs OPERATION SHEET 3.1 individually.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.1.
  - ✓ Give additional problem-solving.

D. Assessment

- **Contact:**
  - ✓ Assess the learners' performance on OPERATION SHEET 3.1.
  - ✓ Assess the learners' conceptual understanding of drawing sectional views and auxiliary views using a rubric.
  - ✓ Provide necessary feedback and intervention based on the rating from the rubric.

- ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.1.and additional questions.

- **Non-contact:**
  - ✓ Assess the learners' performance on OPERATION SHEET 3.1.
  - ✓ Assess the learners' conceptual understanding of drawing sectional views and auxiliary views using a rubric.
  - ✓ Provide necessary feedback and intervention based on the rating from the rubric.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.1.and additional questions uploaded in Google Classroom.

E. Resources (Online or offline)

- Competency-Based Learning Materials for Class XI
- https://youtu.be/0x4Mq3plkEw (Explanations on sectional views and how to create)
- https://youtu.be/vZbrcAGOB_o (Explanation on axillary views and how to create)

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

Learning objectives	Core concepts(Chapters/Topics)
3.2.1 Define mechanical drawing. 3.2.2 List types of mechanical drawing. 3.2.3 Explain plan, elevation, and section. 3.2.4 Interpret simple mechanical drawing. *3.2.5 Ensure clean and neatness of drawing.* *3.2.6 Ensure Proper handling of drawing instruments.*	**3.2 Interpreting simple mechanical drawing**

B. Competencies:

i. Draw mechanical parts as per job requirements.

C. Pedagogy/Learning experience

- **Contact:**
  - ✓ Let the learners read INFORMATION SHEET 3.2.
  - ✓ Share the web link https://ocw.mit.edu/courses/mechanical-engineering/2-007-design-and-manufacturing-i-spring-2009/related-resources/drawing_and_sketching/ and https://youtu.be/1_gzd-yQLuU to explore on types of mechanical drawing and angle elevation.
  - ✓ Based on the information gathered, the learner draws a mind map on types of mechanical drawing and drawing elevation.
  - ✓ Demonstrate the different types of mechanical drawing and elevation of drawing.
  - ✓ Let the learners perform OPERATION SHEET 3.2.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.2.

- **Non-contact:**
  - ✓ Let the learners read INFORMATION SHEET 3.2.
  - ✓ Share the web link https://ocw.mit.edu/courses/mechanical-engineering/2-007-design-and-manufacturing-i-spring-2009/related-resources/drawing_and_sketching/ and https://youtu.be/1_gzd-yQLuU to explore on types of mechanical drawing and angle elevation.
  - ✓ Based on the information gathered, the learner draws a mind map on types of mechanical drawing and drawing elevation.
  - ✓ Let the learners perform OPERATION SHEET 3.2.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.2.

D. Assessment

- **Contact:**
  - ✓ Assess the learners' performance referring to OPERATION SHEET 3.2.
  - ✓ Assess the mind map to assess the learner's conceptual understanding of types of mechanical drawing and drawing elevation.
  - ✓ Provide necessary intervention.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.2.

- **Non-contact:**
  - ✓ Assess the learners' performance referring to OPERATION SHEET 3.2.
  - ✓ Assess the mind map to assess the learner's conceptual understanding of types of mechanical drawing and drawing elevation.
  - ✓ Provide necessary intervention.
  - ✓ Assess the learners' responses to SAMPLE SELF CHECK 3.2 uploaded in Google Classroom.

E. Resources(online and offline):

- Competency-Based Learning Materials for Class XI.
- https://ocw.mit.edu/courses/mechanical-engineering/2-007-design-and-manufacturing-i-spring-2009/related-resources/drawing_and_sketching/ (Articles on types of the mechanical drawing)
- https://youtu.be/1_gzd-yQLuU (Explanations on differences between 1st angle and 3rd angle projection)

A. Learning objectives/Broad Theme/Strand/Chapter/Topics:

Learning Objectives	Core concept(Chapters/Topics
3.3.1 Development of surfaces. 3.3.2 Draw mechanical machine parts. 3.3.3 *Ensure clean and neatness of drawing* 3.3.4 *Ensure Proper handling of drawing instruments*	**3.3 Drawing mechanical machine parts**

B. Competencies:

i. Develop surface of any mechanical machine parts.

C. Pedagogy/Learning Experiences

- **Contact:**
  - ✓ Let the learners read INFORMATION SHEET 3.3.
  - ✓ Let the learners explore information from the following web links:
    https://youtu.be/IwlrJOHgOB8
    https://youtu.be/IIj-f38rO5c
    https://youtu.be/zIblZ7dt3Dk
  - ✓ Based on the information, the learner take notes and solve the questions given in the web link https://youtu.be/zIblZ7dt3Dk
  - ✓ Let the learners perform OPERATION SHEET 3.3 individually.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.3.

- **Non-contact:**
  - ✓ Let the learners read INFORMATION SHEET 3.3.
  - ✓ Let the learners explore information from the following web links:
    https://youtu.be/IwlrJOHgOB8
    https://youtu.be/IIj-f38rO5c
    https://youtu.be/zIblZ7dt3Dk
  - ✓ Based on the information, the learner take notes and solve the questions given in the web link https://youtu.be/zIblZ7dt3Dk
  - ✓ Let the learners perform OPERATION SHEET 3.3 individually.
  - ✓ Let the learners solve SAMPLE SELF CHECK 3.3.

D. Assessment

- **Contact:**
  - ✓ Assess the learners' responses to the questions given through the link.
  - ✓ Assess the learners' performance referring to OPERATION SHEET 3.3.
  - ✓ Assess learners' responses to SAMPLE SELF CHECK3.3.
  - ✓ Provide necessary intervention.

- **Non-contact:**
  - ✓ Assess the learners' responses to the questions given through the link.
  - ✓ Assess the learners' performance referring to OPERATION SHEET 3.3.

- ✓ Assess learners' responses to SAMPLE SELF CHECK3.3 uploaded in Google Classroom.
- ✓ Provide necessary intervention.

F. Resources(online and offline):

- Competency-Based Learning Materials for Class XI
- https://youtu.be/IwlrJOHgOB8 (Explanation on surface development)
- https://youtu.be/IIj-f38rO5c (Explanation on surface development)
- https://youtu.be/zIblZ7dt3Dk (Problems-solving on the surface)

RESOURCES

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