



# GRADE 10 METAL TECHNOLOGY SCHEMES OF WORK FOR TERM

1

NAME OF THE TEACHER:.....

SCHOOL:..... YEAR:.....

| Week | Lesson | Strand                                      | Sub-strand                                  | Specific Learning Outcomes                                                                                               | Key Inquiry Questions                                 | Learning Experiences                                                            | Learning Resources                              | Assessment         | Reflection |
|------|--------|---------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------|--------------------|------------|
| 1    | 1      | <b>1.0 Fundamentals of Metal Technology</b> | <b>1.1 Introduction to Metal Technology</b> | By the end of the lesson, the learner should be able to define terms used in metal technology.                           | What is the importance of studying metal technology ? | Learner guided to brainstorm on terms (metal, tools, workshop).                 | Curriculum Design (2024) pg 1; Textbooks        | Oral questions     |            |
|      | 2      |                                             |                                             | By the end of the lesson, the learner should be able to explain the importance of studying metal technology as a career. |                                                       | Learner guided to discuss the importance of studying metal technology.          | Curriculum Design (2024) pg 1; Career pamphlets | Discussion         |            |
|      | 3      |                                             |                                             | By the end of the lesson, the learner should be able to describe businesses related to metal technology.                 |                                                       | Learner guided to explore metal technology-related businesses in the community. | Curriculum Design (2024) pg 1; Digital devices  | Written notes      |            |
|      | 4      |                                             |                                             | By the end of the lesson, the learner should                                                                             |                                                       | Learner guided to visit local metal                                             | Curriculum Design (2024)                        | Field visit report |            |

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|------|--------|--------|-------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------|----------------|------------|
|      |        |        |                               | be able to appreciate metal technology in daily life.                                           |                                         | businesses and share experiences.                                                     | pg 2; Field report                            |                |            |
|      | 5      |        | <b>1.2 Safety at Workshop</b> | By the end of the lesson, the learner should be able to explain safety in a metal workshop.     | How does workshop layout impact safety? | Learner guided to brainstorm on aspects of safety (personal, equipment, environment). | Curriculum Design (2024) pg 3; Safety posters | Oral questions |            |
|      | 6      |        |                               | By the end of the lesson, the learner should be able to explore workshop rules and regulations. |                                         | Learner guided to search for OSHA rules and regulations.                              | Curriculum Design (2024) pg 3; OSHA documents | Written quiz   |            |
| 2    | 1      |        |                               | By the end of the lesson, the learner should be able to describe possible causes of accidents.  |                                         | Learner guided to discuss possible causes of accidents in a metal workshop.           | Curriculum Design (2024) pg 3; Case studies   | Discussion     |            |
|      | 2      |        |                               | By the end of the lesson, the learner should be able to outline first aid procedures.           |                                         | Learner guided to demonstrate first aid procedures for accident casualties.           | Curriculum Design (2024) pg 3; First Aid Kit  | Practical demo |            |
|      | 3      |        |                               | By the end of the lesson, the learner should be able to                                         |                                         | Learner guided to simulate first aid for specific                                     | Curriculum Design (2024) pg 3; Bandages       | Practical      |            |

| Wee<br>k | Lesso<br>n | Strand                  | Sub-strand                     | Specific<br>Learning<br>Outcomes                                                                  | Key<br>Inquiry<br>Questions                       | Learning<br>Experiences                                                               | Learning<br>Resources                             | Assessment      | Reflection |
|----------|------------|-------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------|-----------------|------------|
|          |            |                         |                                | demonstrate first aid for cuts and burns.                                                         |                                                   | workshop injuries.                                                                    |                                                   |                 |            |
|          | 4          |                         |                                | By the end of the lesson, the learner should be able to describe components of a workshop layout. |                                                   | Learner guided to watch videos on different workshop layouts.                         | Curriculum Design (2024) pg 3; Video clips        | Observation     |            |
|          | 5          |                         |                                | By the end of the lesson, the learner should be able to visit a workshop to observe safety.       |                                                   | Learner guided to visit a workshop in the locality to observe safety measures.        | Curriculum Design (2024) pg 3; Checklist          | Field report    |            |
|          | 6          |                         |                                | By the end of the lesson, the learner should be able to appreciate the importance of safety.      |                                                   | Learner guided to discuss the importance of safety in a metal workshop.               | Curriculum Design (2024) pg 3; Reflection journal | Self-reflection |            |
| 3        | 1          | 2.0 Tools and Materials | 2.1 Hand tools and bench tools | By the end of the lesson, the learner should be able to identify cutting tools.                   | What are the benefits of using appropriate tools? | Learner guided to use visual aids/realia to identify cutting tools (hacksaws, files). | Curriculum Design (2024) pg 6; Real tools         | Identification  |            |
|          | 2          |                         |                                | By the end of the lesson, the learner should be able to                                           |                                                   | Learner guided to use visual aids/realia to identify driving tools                    | Curriculum Design (2024) pg 6; Real tools         | Identification  |            |

| Week | Lesson | Strand | Sub-strand | Specific Learning Outcomes                                                                | Key Inquiry Questions | Learning Experiences                                                                | Learning Resources                          | Assessment     | Reflection |
|------|--------|--------|------------|-------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------------------------|----------------|------------|
|      |        |        |            | identify driving tools.                                                                   |                       | (hammers, mallets).                                                                 |                                             |                |            |
|      | 3      |        |            | By the end of the lesson, the learner should be able to identify holding tools.           |                       | Learner guided to use visual aids/realia to identify holding tools (vices, clamps). | Curriculum Design (2024) pg 6; Real tools   | Identification |            |
|      | 4      |        |            | By the end of the lesson, the learner should be able to select tools for a given task.    |                       | Learner guided to select appropriate hand tools for specific tasks.                 | Curriculum Design (2024) pg 6; Tool rack    | Selection task |            |
|      | 5      |        |            | By the end of the lesson, the learner should be able to demonstrate use of cutting tools. |                       | Learner guided to demonstrate safe use of hacksaws and files.                       | Curriculum Design (2024) pg 6; Metal pieces | Practical      |            |
|      | 6      |        |            | By the end of the lesson, the learner should be able to demonstrate use of driving tools. |                       | Learner guided to demonstrate safe use of hammers and screwdrivers.                 | Curriculum Design (2024) pg 6; Workpieces   | Practical      |            |
| 4    | 1      |        |            | By the end of the lesson, the learner should be able to demonstrate use of holding tools. |                       | Learner guided to demonstrate safe use of vices and clamps.                         | Curriculum Design (2024) pg 6; Bench vice   | Practical      |            |

| Week | Lesson | Strand | Sub-strand | Specific Learning Outcomes                                                                    | Key Inquiry Questions             | Learning Experiences                                             | Learning Resources                             | Assessment  | Reflection |
|------|--------|--------|------------|-----------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------|------------------------------------------------|-------------|------------|
|      | 2      |        |            | By the end of the lesson, the learner should be able to perform a filing task.                |                                   | Learner guided to perform a filing task using hand tools.        | Curriculum Design (2024) pg 6; Files           | Practical   |            |
|      | 3      |        |            | By the end of the lesson, the learner should be able to perform a sawing task.                |                                   | Learner guided to perform a sawing task using a hacksaw.         | Curriculum Design (2024) pg 6; Hacksaw         | Practical   |            |
|      | 4      |        |            | By the end of the lesson, the learner should be able to perform a drilling task (Hand drill). |                                   | Learner guided to use hand drills safely.                        | Curriculum Design (2024) pg 6; Hand drill      | Practical   |            |
|      | 5      |        |            | By the end of the lesson, the learner should be able to maintain cutting tools.               | How does care enhance efficiency? | Learner guided to maintain cutting tools (cleaning, sharpening). | Curriculum Design (2024) pg 6; Maintenance kit | Observation |            |
|      | 6      |        |            | By the end of the lesson, the learner should be able to maintain driving and holding tools.   |                                   | Learner guided to maintain driving and holding tools.            | Curriculum Design (2024) pg 6; Oil/Grease      | Observation |            |
| 5    | 1      |        |            | By the end of the lesson, the learner should be able to store                                 |                                   | Learner guided to store hand tools in the workshop               | Curriculum Design (2024) pg 6; Tool storage    | Practical   |            |

| Week | Lesson | Strand | Sub-strand | Specific Learning Outcomes                                                                           | Key Inquiry Questions | Learning Experiences                                                | Learning Resources                              | Assessment  | Reflection |
|------|--------|--------|------------|------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------|-------------------------------------------------|-------------|------------|
|      |        |        |            | hand tools properly.                                                                                 |                       | (shadow boards, racks).                                             |                                                 |             |            |
|      | 2      |        |            | By the end of the lesson, the learner should be able to appreciate the importance of tools.          |                       | Learner guided to discuss the value of hand and bench tools.        | Curriculum Design (2024) pg 6; Discussion group | Peer review |            |
|      | 3      |        |            | By the end of the lesson, the learner should be able to identify bench tools (Shears/Snips).         |                       | Learner guided to identify and use bench shears/snips.              | Curriculum Design (2024) pg 6; Bench shears     | Practical   |            |
|      | 4      |        |            | By the end of the lesson, the learner should be able to use chisels safely.                          |                       | Learner guided to use cold chisels for metal cutting.               | Curriculum Design (2024) pg 6; Cold chisels     | Practical   |            |
|      | 5      |        |            | By the end of the lesson, the learner should be able to perform a complex task using multiple tools. |                       | Learner guided to combine sawing and filing to shape a metal piece. | Curriculum Design (2024) pg 6; Metal stock      | Project     |            |
|      | 6      |        |            | By the end of the lesson, the learner should be able to clean the workbench area.                    |                       | Learner guided to clean and organize the workbench area after use.  | Curriculum Design (2024) pg 6; Cleaning tools   | Observation |            |

| Week | Lesson | Strand | Sub-strand                        | Specific Learning Outcomes                                                                               | Key Inquiry Questions                                   | Learning Experiences                                                     | Learning Resources                           | Assessment     | Reflection |
|------|--------|--------|-----------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------|----------------|------------|
| 6    | 1      |        | 2.2 Measuring & Marking Out Tools | By the end of the lesson, the learner should be able to identify measuring tools (Steel rule, Tape).     | What are benefits of using appropriate measuring tools? | Learner guided to identify steel rules and measuring tapes using realia. | Curriculum Design (2024) pg 8; Steel rule    | Identification |            |
|      | 2      |        |                                   | By the end of the lesson, the learner should be able to identify marking out tools (Scriber, Punch).     |                                                         | Learner guided to identify scribes, dot punches, and centre punches.     | Curriculum Design (2024) pg 8; Scriber/Punch | Identification |            |
|      | 3      |        |                                   | By the end of the lesson, the learner should be able to identify checking tools (Try square, Callipers). |                                                         | Learner guided to identify try squares, outside and inside callipers.    | Curriculum Design (2024) pg 8; Callipers     | Identification |            |
|      | 4      |        |                                   | By the end of the lesson, the learner should be able to identify layout tools (Surface table, V-block).  |                                                         | Learner guided to identify surface tables, vee-blocks, and angle blocks. | Curriculum Design (2024) pg 8; Surface table | Identification |            |
|      | 5      |        |                                   | By the end of the lesson, the learner should be able to discuss the use                                  |                                                         | Learner guided to discuss the use of measuring and marking tools.        | Curriculum Design (2024) pg 8; Textbooks     | Discussion     |            |

| Week | Lesson | Strand | Sub-strand | Specific Learning Outcomes                                                                        | Key Inquiry Questions | Learning Experiences                                                     | Learning Resources                                | Assessment | Reflection |
|------|--------|--------|------------|---------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------|---------------------------------------------------|------------|------------|
|      |        |        |            | of measuring tools.                                                                               |                       |                                                                          |                                                   |            |            |
|      | 6      |        |            | By the end of the lesson, the learner should be able to demonstrate use of steel rule and scribe. |                       | Learner guided to measure and mark lines using steel rule and scribe.    | Curriculum Design (2024) pg 8; Metal sheet        | Practical  |            |
| 7    | 1      |        |            | By the end of the lesson, the learner should be able to demonstrate use of punches.               |                       | Learner guided to use dot and centre punches for marking.                | Curriculum Design (2024) pg 8; Hammer/Punch       | Practical  |            |
|      | 2      |        |            | By the end of the lesson, the learner should be able to demonstrate use of dividers.              |                       | Learner guided to use dividers to scribe circles and arcs.               | Curriculum Design (2024) pg 8; Dividers           | Practical  |            |
|      | 3      |        |            | By the end of the lesson, the learner should be able to demonstrate use of callipers.             |                       | Learner guided to use inside and outside callipers to measure diameters. | Curriculum Design (2024) pg 8; Cylindrical object | Practical  |            |
|      | 4      |        |            | By the end of the lesson, the learner should be able to use odd leg callipers.                    |                       | Learner guided to use odd leg callipers for marking parallel lines.      | Curriculum Design (2024) pg 8; Odd leg callipers  | Practical  |            |
|      | 5      |        |            | By the end of the lesson, the learner should                                                      |                       | Learner guided to set up and use a scribing                              | Curriculum Design (2024)                          | Practical  |            |

| Week | Lesson   | Strand         | Sub-strand     | Specific Learning Outcomes                                                                     | Key Inquiry Questions            | Learning Experiences                                                  | Learning Resources                                | Assessment      | Reflection |
|------|----------|----------------|----------------|------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------|---------------------------------------------------|-----------------|------------|
|      |          |                |                | be able to use scribing block and surface table.                                               |                                  | block on a surface table.                                             | pg 8; Surface gauge                               |                 |            |
|      | 6        |                |                | By the end of the lesson, the learner should be able to maintain marking out tools.            | How does care enhance precision? | Learner guided to maintain and store measuring and marking out tools. | Curriculum Design (2024) pg 8; Oil/Cloth          | Observation     |            |
| 8    | MID-TERM | MID-TERM BREAK | MID-TERM BREAK | MID-TERM BREAK                                                                                 | MID-TERM BREAK                   | MID-TERM BREAK                                                        | MID-TERM BREAK                                    | MID-TERM BREAK  | MID-TERM   |
| 9    | 1        |                |                | By the end of the lesson, the learner should be able to perform a marking out task (Template). |                                  | Learner guided to mark out a simple template on sheet metal.          | Curriculum Design (2024) pg 8; Sheet metal        | Project         |            |
|      | 2        |                |                | By the end of the lesson, the learner should be able to perform a marking out task (Layout).   |                                  | Learner guided to layout a design on a metal bar.                     | Curriculum Design (2024) pg 8; Metal bar          | Project         |            |
|      | 3        |                |                | By the end of the lesson, the learner should be able to appreciate measuring tools.            |                                  | Learner guided to acknowledge importance of precision tools.          | Curriculum Design (2024) pg 8; Reflection journal | Self-assessment |            |

| Week      | Lesson | Strand | Sub-strand                                | Specific Learning Outcomes                                                                          | Key Inquiry Questions                 | Learning Experiences                                                                 | Learning Resources                             | Assessment     | Reflection |
|-----------|--------|--------|-------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------|----------------|------------|
|           | 4      |        | <b>2.3 Ferrous and Non-ferrous metals</b> | By the end of the lesson, the learner should be able to distinguish ferrous and non-ferrous metals. | Why is the study of metals important? | Learner guided to search for information on ferrous and non-ferrous metals.          | Curriculum Design (2024) pg 10; Internet       | Written notes  |            |
|           | 5      |        |                                           | By the end of the lesson, the learner should be able to identify ferrous metals.                    |                                       | Learner guided to sort metals into ferrous (iron, steel).                            | Curriculum Design (2024) pg 10; Magnet/Samples | Classification |            |
|           | 6      |        |                                           | By the end of the lesson, the learner should be able to identify non-ferrous metals.                |                                       | Learner guided to sort metals into non-ferrous (copper, aluminium, tin, lead, zinc). | Curriculum Design (2024) pg 10; Metal samples  | Classification |            |
| <b>10</b> | 1      |        |                                           | By the end of the lesson, the learner should be able to discuss types of ferrous metals.            |                                       | Learner guided to discuss mild steel, high carbon steel, etc.                        | Curriculum Design (2024) pg 10; Textbooks      | Discussion     |            |
|           | 2      |        |                                           | By the end of the lesson, the learner should be able to brainstorm properties of metals.            |                                       | Learner guided to brainstorm on physical and mechanical properties of metals.        | Curriculum Design (2024) pg 10; Chart          | Brainstorming  |            |
|           | 3      |        |                                           | By the end of the lesson, the learner should                                                        |                                       | Learner guided to search for information on                                          | Curriculum Design (2024)                       | Research       |            |

| Week | Lesson | Strand          | Sub-strand      | Specific Learning Outcomes                                                                | Key Inquiry Questions                      | Learning Experiences                                                               | Learning Resources                         | Assessment        | Reflection |
|------|--------|-----------------|-----------------|-------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------|-------------------|------------|
|      |        |                 |                 | be able to search on production of iron.                                                  |                                            | production of iron from its ore.                                                   | pg 10; Digital devices                     |                   |            |
|      | 4      |                 |                 | By the end of the lesson, the learner should be able to discuss iron production process.  |                                            | Learner guided to discuss the process of producing iron from ore.                  | Curriculum Design (2024) pg 10; Flow chart | Oral presentation |            |
|      | 5      |                 |                 | By the end of the lesson, the learner should be able to illustrate material supply forms. |                                            | Learner guided to brainstorm on forms of material supply (sheets, plates, bars).   | Curriculum Design (2024) pg 10; Samples    | Identification    |            |
|      | 6      |                 |                 | By the end of the lesson, the learner should be able to sketch material supply forms.     |                                            | Learner guided to sketch forms of material supply in a metal workshop.             | Curriculum Design (2024) pg 10; Sketchbook | Drawing           |            |
| 11   | 1      |                 |                 | By the end of the lesson, the learner should be able to appreciate uses of metals.        | What are the uses of metals in daily life? | Learner guided to acknowledge use of ferrous and non-ferrous metals in daily life. | Curriculum Design (2024) pg 10; Home items | Reflection        |            |
|      | 2      | <b>REVISION</b> | <b>Revision</b> | By the end of the lesson, the learner should be able to revise Strand 1.0 concepts.       |                                            | Review of Introduction and Safety.                                                 | Past papers                                | Written Practice  |            |

| Week | Lesson | Strand          | Sub-strand        | Specific Learning Outcomes                                                          | Key Inquiry Questions | Learning Experiences            | Learning Resources | Assessment         | Reflection        |
|------|--------|-----------------|-------------------|-------------------------------------------------------------------------------------|-----------------------|---------------------------------|--------------------|--------------------|-------------------|
|      | 3      | <b>REVISION</b> | <b>Revision</b>   | By the end of the lesson, the learner should be able to revise Strand 2.1 concepts. |                       | Review of Hand and Bench Tools. | Practical Station  | Practical Practice |                   |
| 12   | ALL    | <b>END TERM</b> | <b>ASSESSMENT</b> | <b>END TERM ONE ASSESSMENT</b>                                                      |                       | <b>END TERM ONE ASSESSMENT</b>  |                    | <b>EXAMS</b>       | <b>ASSESSMENT</b> |