GRANDE PRAIRIE REGIONAL COLLEGE
Industrial Training

Industrial Maintenance Technician Program

COURSE SYLLABUS - SEMESTER I

SHOP PRACTICE I: IM0061

This course is designed to give students a hands-on approach to learning. Layout and fabricating projects will improve students' critical thinking skills.

Prerequisites: None
Textbook: See Trade Theory I Syllabus
Class Hours: See Timetable

Course Objectives

Unit 1: Safety

Students will implement safety regulations and precautions for each other, tools and machines.

Upon completion of this unit, students will be able to:

1. demonstrate safe shop practices.
2. demonstrate effective housekeeping practices.

Unit 2: Measurement

Students will use both the standard and the metric system of measurement in processing shop projects. Measurement will include the application of precision and non-precision measurement.

Upon completion of this unit, students will be able to:

1. perform precision shop measurement.
2. use the various types of gages.
3. apply principle of limits of size and fit in manufacture of projects.
4. care for measurement tools properly.

Unit 3: Layout

Following a blueprint, the student will transfer the information to his/her project. Accuracy of the layout will be stressed as the lines made will be the guide.

Upon completion of this unit, students will be able to:

1. demonstrate the proper and safe use of non-precision and semi-precision layout tools.
2. construct basic layouts.

Unit 4: Benchwork

Benchwork will include the operations of laying out, fitting and assembling shop projects.

Upon completion of this unit, students will be able to:

1. select the proper hand tool for the job.
2. demonstrate required shop procedures for effective use and handling.
3. provide the proper care and storage of tools.

Unit 5: Thread and Fasteners

This unit will consist of machining internal and external threads on shop projects.

Upon completion of this unit, students will be able to:

1. demonstrate effective use of lap and dies.
2. demonstrate procedures for set-up and producing a thread on the lathe.

Unit 6: Drilling

The students will be required to use effective work set-up, speed calculations and safe procedures in manufacturing of shop projects.

Upon completion of this unit, students will be able to:

1. make safe set-ups.
2. sharpen a twist drill.

3. work safely with drills and drilling machines.

Unit 7: Lathes

Students will acquire the basic knowledge and safety skills to perform proper lathe handling and operational procedures.

Upon completion of this unit, students will be able to:

1. perform various operations performed on lathes:
    - boring and counter boring
    - taper turning
    - form and profile turning
    - threading
    - filing and deburring
    - polishing
    - drilling
    - centre drilling
    - reaming
    - knurling
    - turning between centres.
2. set-up the various lathe accessories.
3. use the various lathe accessories.
4. effectively grind lathe turning tools.

Unit 8: Tapers

Students will demonstrate the various taper methods and set-up procedures in the machining of shop projects.

Upon completion of this unit, students will be able to:

1. produce tapers using the following methods:
    - tailstock offset
    - taper attachment
    - compound rest.
2. cut short and steep tapers using the compound rest.

Unit 9: Grinding

This unit will introduce the students to safe and effective grinding procedures.

Upon completion of this unit, students will be able to:

1. demonstrate the correct and safe use of grinders.
2. display effective dressing and truing procedures.
3. demonstrate safe wheel handling and mounting procedures.
4. select the proper wheel for the job being done.

Unit 10: Lubrication and Coolants

Students will be taught the importance of lubricants and cutting fluids and effective applications.

Upon completion of this unit, students will be able to:

1. perform maintenance operations on shop machinery.
2. mix coolants for shop machinery.
3. use cutting fluids safely.

Unit 11: Power Saws

Students will be taught the correct and safe use of bandsaws while performing stock cut-off of material used in projects.

Upon completion of this unit, students will be able to:

1. work safely with sawing machines and attachments.
2. mount a blade on machine.
3. prepare the blade for machine use.
4. position work to cut efficiently.

Unit 12: Metallurgy

Students will learn safe and effective work habits in heat treating a shop project.

Upon completion of this unit, students will be able to:

1. demonstrate procedure for heat treating.
2. display safe and effective handling of oxyacetylene equipment.

Unit 13: Alignment

Students will learn basic alignment techniques in the process of setting up and aligning shop projects.

Upon completion of this unit, students will be able to:

1. demonstrate basic alignment.
2. demonstrate the effective use of alignment equipment.

Unit 14: Rigging and Hoisting

In this unit students will examine lifting machinery components using rigging and hoisting methods.

Upon completion of this unit, students will be able to:

1. demonstrate safe and effective rigging procedures.
2. describe the use of rigging knots.
3. identify hand signals.
4. determine the centre of gravity.

Unit 15: Welding and Fitting

Shop work will give the student an opportunity to use an oxygen/acetylene torch in a safe and reliable manner to perform tasks associated with cutting and brazing. In addition students will perform various weld joints using an arc welder.

Upon completion of this unit, students will be able to:

1. demonstrate the proper handling of oxyacetylene equipment.

2. perform gas welding and cutting procedures.

3. perform arc welding set-up procedures.

4. perform arc welding of various weld joints.

5. perform pipe fitting and layout.

Evaluation

The students will be evaluated on shop projects, as follows.

1.	Punch and Chisel Set	30%
2.	Shaft	10%
3.	Cannon	30%
4.	Drill Sharpening	5%
5.	Alignment	10%
6.	Rigging and Hoisting (procedures)	5%
7.	Welding and Fitting	10%

Attendance

Refer to the Attendance Policy - Progression Criteria