

# METAL FABRICATION (MFAB)

This is a list of the Metal Fabrication (MFAB) courses available at Kwantlen.

## **MFAB 1100 CR-2.5**

### **Safe Working Procedures**

Students will use personal protective equipment, adhere to applicable safety regulations and use fire suppression equipment. They will employ safe lifting techniques, use cranes, lift trucks and material handling equipment, as well as tie knots, bends, and hitches in ropes to be used in the rigging of equipment. Students will use safety procedures to erect ladders and scaffolding and investigate the common causes of accidents in metal fabrication shops and job sites and address special precautions to be taken in adverse weather conditions.

*Co-requisites: MFAB 1105 MFAB 1105*

## **MFAB 1110 CR-2**

### **Trade-specific Tools**

Students will select and use appropriate tools for various tasks with an emphasis on safety. They will complete various assignments and projects using hand tools, bench and hand grinders, portable power tools, and drill presses specific to the metal fabrication industry.

*Prerequisites: MFAB 1100*

*Co-requisites: MFAB 1105 MFAB 1105*

## **MFAB 1115 CR-2**

### **Basic Stationary Power Equipment**

Students will operate metal fabrication equipment including power shears, power brake press, power plate rolls, ironworker, pipe cutters, hole punches, and power metal saws. They will safely complete various basic projects using stationary shop equipment as they relate to the metal fabrication industry.

*Prerequisites: MFAB 1100*

*Co-requisites: MFAB 1105 MFAB 1105*

## **MFAB 1120 CR-2**

### **Oxy-fuel and Cutting Equipment**

Students will assemble and disassemble cutting equipment and use safety procedures for oxy-fuel equipment. They will use oxy-fuel equipment to heat and cut various plate and structural shapes and pipe smoothly and accurately, with hand-held torches and machines.

*Prerequisites: MFAB 1100*

## **MFAB 1125 CR-2.5**

### **Welding for Metal Fabrication**

Students will learn the theory of oxy-fuel and arc welding. They will weld various gauges of metal with oxy-fuel, and arc weld various shapes of metal using Shielded Metal Arc Welding (SMAW) and Gas Metal Arc Welding (GMAW) practices. Students will learn the theory of air carbon arc cutting and plasma arc cutting, and will use air carbon arc cutting equipment to complete various practical projects. They will also use mechanical testing equipment for testing weld specimens.

*Prerequisites: MFAB 1120*

*Co-requisites: MFAB 1105 MFAB 1105*

## **MFAB 1130 CR-2**

### **Read Basic Drawings**

Students will interpret basic blueprints, and sketch or draw objects in a variety of methods including orthographic projection, isometric projection, and secondary views of objects. They will interpret drafting and welding symbols, multi-view shop drawings as well as basic structural drawings. Students will lay out simple templates, identify common structural shapes, use basic layout terms, and develop patterns using parallel line development.

*Co-requisites: MFAB 1105 MFAB 1105*

## **MFAB 1141 CR-4**

### **Basic Metal Fabrication**

Students will perform shop layout tasks, math calculations, and will prepare work orders. They will differentiate among common fitting considerations and procedures, safe work practices, standard allowances, required accuracy, and shop tolerances. Students will complete a variety of metal fabrication practical projects using different types of equipment, metals, and structural shapes. They will utilize common methods of metal preparation for fine finishing of projects and application of a variety of coatings and paints.

*Prerequisites: MFAB 1106 and MFAB 1115 and MFAB 1125*

*Co-requisites: MFAB 1130 MFAB 1130*

## **MFAB 1150 CR-1.5**

### **Metallurgy Theory**

Students will describe the effects of heat and stress on metals and differentiate among the types, grades and properties of steels, as well as choose appropriate stress relieving techniques for metals. They will employ standard destructive testing inspection techniques.

## **MFAB 1205 CR-3**

### **Advanced Industrial Mathematics/Science**

Students will apply the principles of geometric constructions, Pythagorean theory, and trigonometry to metal fabrication, and will use these principles to solve fabrication layout problems and to estimate manufacturing costs using industry-standard methods. They will apply electrical, metallurgical, and other scientific principles to metal fabrication and non-destructive testing. Students will be prepared to the National Occupational Analysis standard for metal fabrication.

*Prerequisites: MFAB 1105 or MFAB 1106 or permission of the instructor*