MILLWRIGHT (INDUSTRIAL MECHANIC) (MWIN)

This is a list of the Millwright (Industrial Mechanic - MWIN) courses available at KPU.

MWIN 1101 CR-2
Millwright Trade Safety
Students will address safe work practices and how they pertain to industrial work sites. They will examine the Occupational Health and Safety Regulation and Guidelines of WorkSafeBC applicable to the millwright trade. Students will practice the safe handling and storage methods for materials and equipment. They will participate in weekly toolbox safety orientation sessions. Students will interact with other students on a program safety committee to achieve an effective safe working environment.

MWIN 1105 CR-2
Print Reading and Sketching
Students will interpret engineering drawings and sketches and will make decisions pertaining to the manufacture, installation, positioning, and/or maintenance of machines or machine components. They will make standardized sketches of machine shop drawings, machine installation drawings, assembly drawings, and detailed engineering drawings. Students will communicate technical information as to the size, shape, construction, and installation details of parts, mechanisms or machines.

Co-requisites: MWIN 1101

MWIN 1111 CR-2
Measuring and Layout Tools
Students will use a variety of measuring and layout tools. They will use techniques appropriate and necessary to make non-precision and precision measurements in either imperial or metric standard. Students will develop strategies from a blueprint or sketch, then lay out the shapes or objects (parts) for manufacture. They will complete assignments that challenge them to make informed decisions on selection, use, concepts and procedures used with each tool or combination of tools taught. Students will develop an understanding of the need for consistency and accuracy based on equipment use. They will make sketches that use detailed methods of reporting.

Co-requisites: MWIN 1101

MWIN 1121 CR-1
Hand Tools and Bench Work
Students will develop basic hand skills that are the foundation for becoming a millwright (industrial mechanic) craftsperson. They will complete shop projects that involve bench work to practice hand skills using metal cutting tools, holding tools, striking tools, and assembling tools. Students will develop knowledge and skill in tool identification, tool selection, and tool maintenance.

Co-requisites: MWIN 1101

MWIN 1131 CR-1
Power Hand Tools
Students will develop and practise the skills required to safely use a large selection of power hand tools used in industrial applications. They will use tools such as electric power tools, pneumatic tools, honing tools, and chain saws. Students will plan and develop strategies to complete projects, and will create written maintenance reports on pieces of equipment or procedures for tool use. They will be certified in the use of selected powder actuated (explosive) tools.

Co-requisites: MWIN 1121

MWIN 1140 CR-4
Machine Tool Basics
Students will operate standard machine tools like metal-cutting saws, drilling machines, bench grinders and surface grinders. They will learn machining fundamentals and common methods of machining and shaping parts to meet given specifications. Students will practice common machining techniques to accurately produce shapes of various types on these machine tools. They will use reasoning and problem solving skills to interpret print information, plan machine tool operations and demonstrate safety awareness when using the machine tools.

Prerequisites: MWIN 1131

MWIN 1150 CR-2
Machine Tools
Students will operate machine tools like milling machines, lathes and a variety of other machine tools to produce industrial components/parts. They will develop machining knowledge and skills while accurately producing these various parts to given specifications. Students will use reasoning and problem solving skills to interpret print information, plan machine tool operations and demonstrate safety awareness when using the machine tools.

Prerequisites: MWIN 1140

MWIN 1160 CR-1 (formerly MWIN 1230)
Fasteners and Fittings
Students will identify and use a wide variety of fasteners to complete assignments that require them to differentiate between thread systems. They will use drawings, parts catalogues and service manuals to locate technical information on fasteners. Students will select the necessary and appropriate hand tools to make bolted and screwed connections and ensure that parts are assembled to specifications.

Prerequisites: MWIN 1140

MWIN 1170 CR-1.5
Metallurgy
Students will participate in lectures and will work in small discussion groups to examine and differentiate the properties of metals, interpret heat-treatment terms, and learn the requirements for different metal heat-treatments. They will learn the basics of different metal manufacturing processes. Students will experiment with identifying different properties of metals and non-metals, with conducting heat-treatments, and with destructive and non-destructive tests on metal samples In the shop.

Prerequisites: MWIN 1121

MWIN 1180 CR-2.5
Level 1 Welding for Millwrights
Students will use a variety of welding processes, welding equipment and other metal working tools appropriate and necessary for the task of joining metals. They will learn and practise procedures, terminology and appropriate safety precautions, as applied to oxy-acetylene use and shielded metal arc welding processes.

Prerequisites: MWIN 1103

MWIN 1205 CR-1
Lubrication
Students will study principles of friction, lubrication theory, and the function of lubricating products. They will dismantle, inspect, assemble, and test mechanical lubrication systems for maintenance then complete maintenance reports.

Prerequisites: MWIN 1120 and 1145 and 1146

MWIN 1235 CR-3.5
Hydraulics
Students will learn fluid power theory, terms, and basic hydraulic system design attending lectures and working in small groups. They will use computer simulation software and hydraulic training panels to construct and trouble-shoot circuits and examine how system components interact. In the shop students will inspect and reassemble selected hydraulic components.

Prerequisites: MWIN 1120 and 1145 and 1146

MWIN 1240 CR-3
Pneumatics
Students will learn gas theory and circuit design methodologies while attending lectures and working in small groups. They will use computer simulation software and pneumatic training panels to design, construct, and trouble-shoot circuits and examine how systems components interact. In the shop, students will report on distribution systems, conduct routine compressor inspections, and dismantle, inspect and reassemble pneumatic components.

Prerequisites: MWIN 1120 and 1145 and 1146