

MECHANICAL TECHNIQUES - INDUSTRIAL MAINTENANCE

Program Outline

Major:	MTIN
Length:	1 Year
Delivery:	2 Semesters
Credential:	Ontario College Certificate
Effective:	2017-2018
Location:	Midland, Owen Sound
Start:	Fall (Midland, Owen Sound)

Description

Students use theoretical and practical training to perform basic industrial and construction millwright techniques. Students gain knowledge in topics such as health and safety, drawing interpretation, applied mathematics, communications, electrical theory, hydraulic applications, welding, basic machining and mechanical maintenance theory and applications.

Career Opportunities

Graduates may find entry level employment in automotive manufacturing, heavy equipment manufacturing and service, automation machine building and service, pharmaceutical manufacturing, food manufacturing, injection moulding, commercial sawmill industry, mining equipment manufacturing, hospital maintenance, retirement home and nursing home maintenance, educational institutional maintenance and most medium to large manufacturing facilities in Ontario. Students may be prepared to apply for work as a millwright apprentice, entry level maintenance mechanic or entry level facilities mechanic.

Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- complete all work in compliance with current legislation, standards, regulations and guidelines;
- contribute to the application of quality control and quality assurance procedures to meet organizational standards and requirements;
- comply with current health and safety legislation, as well as organizational practices and procedures;
- support sustainability best practices in workplaces;
- use current and emerging technologies to support the implementation of mechanical and manufacturing projects;
- troubleshoot and solve standard mechanical problems by applying mathematics and fundamentals of mechanics;
- contribute to the interpretation and preparation of mechanical drawings and other related technical documents;
- perform routine technical measurements accurately using appropriate instruments and equipment;
- assist in manufacturing, assembling, maintaining and repairing mechanical components according to required specifications;
- select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components;
- use current and emerging technologies to troubleshoot routine Industrial Maintenance situations;
- select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components specific to an industrial environment;
- respond to environmental issues related to the industrial maintenance trade;
- identify entrepreneurial opportunities related to the industrial maintenance trade.

The Program Progression:

Fall Intake - Midland, Owen Sound

Sem 1 | Sem 2

Fall | Winter
2017 | 2018

Admission Requirements:

OSSD or equivalent, with
- Grade 12 English (C or U)

- Grade 11 Math (C)

Mature students, non-secondary school applicants (19 years or older), and home school applicants may also be considered for admission. Eligibility may be met by applicants who have taken equivalent courses, upgrading, completed their GED, and equivalency testing. For complete details refer to: www.georgiancollege.ca/admissions/policies-procedures/

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may also be considered for admission; refer to the Credit Transfer Centre website for details: www.georgiancollege.ca/admissions/credit-transfer/

Graduation Requirements:

10 Mandatory Courses

1 Communications Course

1 General Education Course

Graduation Eligibility:

To graduate from this program, the passing weighted average for promotion through each semester, and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester unless otherwise stated on the course outline.

Mandatory Courses

ELEC1002 Electrical Systems and Control

MATH1018 Introduction to Technical Mathematics

MENG1020 Industrial Mechanical Applications

TDIE1001 Basic Machine Tool Application

TDIE1013 Basic Machine Tool Theory

TDIE2000 Hydraulics and Pneumatics

WETC1000 Manufacturing Trade Safety

WETC1001 Blueprint Reading for the Trades

WETC1013 Welding and Cutting Processes

WETC1015 Shielded Metal Arc Welding Fundamentals

Communications Course

To be selected at time of registration from the College list, as determined by testing.

General Education Course

To be selected from College list

Course Descriptions:

ELEC1002 Electrical Systems and Control 56.0 Hours

The principles of motor control and protection in both AC and DC circuits are developed for forward, reverse and speed regulating applications using electromechanical devices. Control of special motors such as synchronous and wound rotor are analyzed. Standard motor control circuit diagrams and symbols receive detailed attention.

MATH1018 Introduction to Technical Mathematics 42.0 Hours

Students are provided a foundation in mathematics in engineering technology and related programs. Students will develop skill in mathematical thinking and problem solving, and appropriately apply technology in the solution of engineering related problems using algebra, geometry, right angle trigonometry, trigonometric functions of any angle, systems of linear equations, and exponential and logarithmic functions. Additional time to strengthen and reinforce mathematical competencies will be made available to those students who require it.

MENG1020 Industrial Mechanical Applications 84.0 Hours

Students are introduced to the principles of metallurgy, lubrication, fastening systems, mechanical drive systems, bearings, shaft alignment and compressors. Classroom sessions are augmented with applicable lab exercises and project work.

TDIE1001 Basic Machine Tool Application 112.0 Hours

This course is a practical application of knowledge pertaining to the safe set-up and operation of standard metal cutting machine tools, the correct and safe selection of cutting tools, R.P.M., feedrates and machining processes.

C- TDIE1013 Basic Machine Tool Theory

TDIE1013 Basic Machine Tool Theory 42.0 Hours

This course is a study of the theoretical application and operation of standard metal cutting machine tools in conjunction with basic techniques required for manufacturing and assembly of machined components.. The process of steel and iron manufacturing is discussed along with their metallurgical qualities and their environmental impact.

C- TDIE1001 Basic Machine Tool Application

TDIE2000 Hydraulics and Pneumatics 42.0 Hours

Students will study Industrial Hydraulic and Pneumatic applications. Topics covered include Fluid Power Principles, their components and their functions. Presentation of introductory concepts will be accompanied by students performing practical lab work on Industrial Fluid Power components and systems.

WETC1000 Manufacturing Trade Safety 42.0 Hours

In this course, students learn how to work safely in a potentially dangerous environment. Specifically, they learn how to identify hazardous conditions and how to identify workplace accidents. Personal, workplace and welding machinery/equipment are emphasized throughout the course. Students learn how to research safety related issues (i.e.: legislation and regulations) using the internet.

WETC1001 Blueprint Reading for the Trades 42.0 Hours

In this course, students learn how to interpret a variety of drawings and schematics typically found in a welding and fabricating environment. Emphasis is placed on drawing interpretation, basic drafting, sketching, and common welding symbols.

WETC1013 Welding and Cutting Processes 42.0 Hours

In this course, students are introduced to the principles and fundamental processes of arc welding, oxy-fuel cutting, power units and their controls. Emphasis is placed on the safe set up and operation of oxy-fuel welding and cutting equipment.

WETC1015 Shielded Metal Arc Welding Fundamentals 42.0 Hours

Students are instructed on the Shielded Metal Arc Welding process. Students use both fast freeze and filler rods in a lab environment. Students are given welding tasks in the flat welding position and on horizontal fillets. The safe use of welding equipment and the wearing of proper personal protective equipment are emphasized in this course.

P- WETC1013 Welding and Cutting Processes

Course Description Legend

P = Prerequisite; C = Concurrent prerequisite; CO= Corequisite

Information contained in College documents respecting programs is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs. The college reserves the right to add or delete programs, options, courses, timetables or campus locations subject to sufficient enrolment, and the availability of courses.