

I. COURSE DESCRIPTION:

This course is designed to give the student an understanding of machining as it pertains to industrial maintenance. Instruction will be given as to the manufacture of new parts, as well as rebuilding and repairing parts that have been in service. Assembly and disassembly of machine components will also be discussed. Trade calculations and measurement are an integral part of this course. A minimum of 95% attendance is expected.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Have an awareness of safety in the operation of the machines used in this trade

Potential Elements of the Performance:

- Justify the importance of shop safety
- Explain why it is important to develop safe work habits
- Recognize and correct unsafe work practices
- Apply safe work practices when employed in a machine shop
- Select the appropriate fire extinguisher for a particular type of fire

2. Understand measurement (metric and imperial) and be able to use the various measuring tools to do their work

Potential Elements of the Performance:

- Measure to 1/64" (0.5mm) with a steel rule
- Measure 0.0001: (0.002mm) using a Vernier micrometer
- Measure to 0.001" (0.02mm) using Vernier measuring tools
- Measure angles to 0 degrees 5 minutes using a universal Vernier bevel protractor
- Identify and use various types of gages found in a machine shop
- Use a dial indicator
- Employ the various caliper measuring tools found in a machine shop

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE CONTINUED:

3. Decide what type of work requires layout, what it involves and how to machine to layout.

Potential Elements of the Performance:

- Explain why layouts are needed
- Identify common layout tools
- Use layout tools safely
- Make basic layouts/list safety rules for layout work

4. Setup work in a lathe, determine feeds and speeds using the various cutting tools and accessories

Potential Elements of the Performance:

- Describe how a lathe operates
- Identify the various parts of a lathe
- Safely setup and operate a lathe using various work-holding devices
- Sharpen lathe cutting Tools

5. Use and care for the various hand tools used in the machining trade.

Potential Elements of the Performance:

- Identify the most commonly used machine shop hand tools
- Select the proper hand tool for the job
- Maintain hand tools properly
- Explain how to use hand tools safely

6. Calculate drill speeds and feeds, as well as how to use the various cutting tools associated with drilling and clearance angles on each.

Potential Elements of the Performance:

- Select and safely use the correct drills and drilling machine for a given job
- Make safe setups on a drill press
- Explain the safety rules that pertain to drilling operations
- List various drill series
- Sharpen a twist drill

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE CONTINUED:

7. Identify grinding wheels and when to use the different types for the correct material. Also how to dress and care for grinding wheels and grinders.

Potential Elements of the Performance:

- Identify the various types of offhand grinders
- Dress and true a grinding wheel
- Prepare a grinder for safe operation
- Use an offhand grinder safely
- List safety rules for offhand grinding

8. Select blades for various and the correct speed to run them at.

Potential Elements of the Performance:

- Identify the various types of sawing and cutoff machines
- Select the correct machine for the job to be done
- Mount a blade and prepare the machine for use
- Position the work of the most efficient cutting
- Safely operate sawing and cutoff machines

III. TOPICS:

1. Shop Safety
2. Measurement
3. Layout
4. The Lathe
5. Hand Tools
6. Drill and Drilling Machines
7. Offhand Grinding
8. Sawing and Cutoff Machines

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Machine Fundamentals Text and Workbook

Calculator, binder, paper pens

V. EVALUATION PROCESS/GRADING SYSTEM:

Evaluation:

Tests	70%
Quizzes/Assignments	20%
Organizational Skills	10%
TOTAL	100%

In addition to the above requirements, students must be in attendance a minimum of 95% of all classes.

The following semester grades will be assigned to students in postsecondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 - 89%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
F (Fail)	59% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:Bursary:

Two student bursaries are awarded each year to students – based on highest applied academic standards with perfect attendance.

Assignments & Projects:

Assignments and projects will be submitted to the professor at the time specified. Late assignments and projects will receive a grade of zero, except in the case of extenuating circumstances and the student has contacted the professor prior to the due date.

Guidelines on Conduct:

Reliability: Neither industrial work places or Sault College can or will tolerate tradesmen (students) taking time off without adequate reason or without maximum possible notice. A very real part of reliability is the ability to carry out responsibilities with minimum supervision.

Attendance/Punctuality: Attendance is mandatory for all classes unless specifically excused. This includes any organized field trips both locally and out of town. Medical absences must be substantiated with a written note from either a Doctor or the College Health Nurse. Punctuality is important as demonstrations may occur at the beginning of a class.

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.