

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

COURSE OUTLINE

COURSE TITLE: MACHINE SHOP PRACTICAL II

CODE NO. : MCH 145 **SEMESTER:** TWO

PROGRAM: Mechanical Engineering Technician - Manufacturing
Mechanical Techniques – Millwright
Mechanical Techniques – Machine Shop

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DATE: MAY 2016 **PREVIOUS OUTLINE DATED:** JAN 2016

APPROVED:

“Corey Meunier”
CHAIR

TOTAL CREDITS: 4

PREREQUISITE(S): MCH121, MCH144

HOURS/WEEK: 4

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I. COURSE DESCRIPTION:

This course is a continuation of Machine Shop Practical I. The student will continue to develop the skills required to safely setup and operate various machines used in Machine Shops. Focus will be on enhancing existing skills using lathes, milling machines and other machines used in the manufacture of components.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. *Work safe in a shop environment whether running machines or doing bench work.*Potential Elements of the Performance:

- Use all shop safety rules.
- Wear and use proper safety equipment.
- Operate machines in a safe manner.
- Practice safe working habits.

2. *Use all of the various measuring tools to verify dimensions of machined parts.*Potential Elements of the Performance:

- Use measuring tools such as scales, inside and outside micrometers and vernier calipers.
- Use transfer measuring tools such as inside and outside calipers, telescopic gauges, small hole gauges and dividers.

3. *Setup and Safely operate lathes.*Potential Elements of the Performance:

- Use four jaw chucks for centering work
- Select correct speeds and feeds
- Select proper pitches using quick change gear box
- Understand and cut threads using different methods and pitches

4. *Setup and safely operate Milling Machines.*Potential Elements of the Performance:

- Setup milling machines using various work holding methods
- Select proper speeds and feeds and verify correct cutter rotation
- Perform various operations such as squaring stock
- Learn about keys and keyways and how to successfully setup and cut

5. *Select and operate different types of drill presses.*

Potential Elements of the Performance:

- Operate sensitive and radial arm drill presses safely.
- Select proper size drills for drilling and tapping.
- Perform operations such as drilling, reaming, and counter boring.
- Perform safe work holding using clamps, vises, angle plates, vee blocks and parallels.

6. *Safely operate arbour press.*

Potential Elements of the Performance:

- Using an arbour press correctly install bushings or bearings
- Learn about internal keyways and how to cut them using an arbour press

7. *Safely perform bench work and assembly.*

Potential Elements of the Performance:

- Assemble machined components
- Make necessary adjustments to allow components to fit together
- Verify accuracy of finished assembled components.

III. TOPICS:

1. Working safely in a shop environment.
2. Use and care of measuring tools.
3. Safe setup and operation of lathes
4. Safe setup and operation of milling machines
5. Safe setup and operation of drill presses
6. Safely operate arbour press
7. Safely perform bench work and assembly

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- Machining Fundamentals textbook (recommended)
- Scientific calculator (not cell phones)
- Safety glasses
- Safety boots
- Shop coats (Not mandatory but recommended to protect clothing)
- Hair net required when hair is below collar length.
- (Hair may also be put up underneath a ball cap)

NOTE

Students are expected to wear safety equipment in the shop, failure to do so will result in denial to work in the shop on that occasion. While working in the shop do not wear rings or exposed jewellery or shorts.

V. EVALUATION PROCESS/GRADING SYSTEM:

<i>Primary Projects</i>	70%
<i>Attitude and Participation</i>	10%
<i>Attendance and Safety</i>	20%
<i>-1% per Hour (Late = 1 Hour)</i>	

Each absence will reduce this portion of the attendance mark by 33%. If the student accumulates 3 absences in the semester, a meeting will be scheduled with the Dean of this program. Continued enrollment in this program will be decided by the Dean, the Coordinator and the instructor of this program.

<i>Total</i>	100%
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NO CELL PHONES ARE PERMITTED
IN THE SHOP OR CLASSROOM

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
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:

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

It is the departmental policy that once the classroom door has enclosed, the learning process has begun. Late arrivers will not be granted admission to the room.

Safety:

Sault College recognizes that the Health and Safety of the Students and Staff is of the utmost importance. Recognizing that safety is everyone's responsibility and there is never a reason to compromise safety, is an important step in reducing accidents. To minimize potential hazards in the shop and various labs, safety rules will be strictly enforced.

Students must continuously wear all Sault College required **Personal Protective Equipment (PPE)** while working in the shop or lab as required by the Instructor. Students are required to wearing their required PPE prior to entering the lab. Failure to do this will result in the expulsion from the shop or lab activity and a zero attendance mark will be recorded. A student who repeatedly neglects to wear PPE as required is in violation of the Sault College Academic code of Conduct and may be sanctioned accordingly.(see Student Code of Conduct & Appeal Guidelines). For instance, first violation-verbal warning, second violation –written warning and the third violation-suspension from the Shop or Lab. For each infraction a 1% penalty is applied (as per the Evaluation/Grading System above.)

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.