

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



COURSE OUTLINE

COURSE TITLE: BEARINGS, SEALS AND LUBRICATION

CODE NO. : MCH253 **SEMESTER:** TWO

PROGRAM: MECHANICAL PROGRAMS

AUTHOR: Cam Pucci
Cam.Puccui@saultcollege.ca

DATE: December 2016 **PREVIOUS OUTLINE DATED:** January 2016

APPROVED: *“Corey Meunier”* December 2016
CHAIR

TOTAL CREDITS: 2

PREREQUISITE(S): N/A

HOURS/WEEK: 2

Copyright ©2017 The Sault College of Applied Arts & Technology
*Reproduction of this document by any means, in whole or in part, without prior
written permission of Sault College of Applied Arts & Technology is prohibited.*
For additional information, please contact Corey Meunier, Chair
School of Technology & Skilled Trades
(705) 759-2554, Ext. 2610

I. COURSE DESCRIPTION:

This course will deal with various friction and anti-friction type bearings, dynamic and static type seals and Lubrication both oil and grease. The student will learn the different styles of bearings used today including design, working conditions, loading, fits, preparation, installation, failure types and preventative maintenance. The student will learn about the importance of correct seal type, design, application installation and maintenance. The student will learn about lubrication types, properties and various applications.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. *Identify the various styles and uses of Friction type bearings.*

Potential Elements of the Performance:

- Describe each styles of bearing housing
- Define dimensions for housings and bearings
- List Friction bearing materials
- Identify different housing designs
- Describe babbit bearings
- Calculate bearing Clearances
- Describe various methods of Thrust control

2. *Identify the various styles of anti-friction type bearings.*

Potential Elements of the Performance:

- Classify Anti-friction bearing components
- Classify different types of anti-friction bearings
- Describe the load conditions for each style of bearing
- Explain the bearing size and classifications

3. *Demonstrate installing and removing bearings.*

Potential Elements of the Performance:

- Perform shaft and housing checks
- Install bearings on various types of fits
- Use different accessories to remove bearings
- Install tapered-bore bearings
- Calculate and correctly set bearing clearances
- Install and remove Pillow blocks of different designs

4. *Demonstrate the maintenance of all types of Bearings and Housing.*

Potential Elements of the Performance:

- Understand the importance of keeping bearings clean
- Understand the importance of keeping bearings in good condition
- Apply good maintenance practices

5. *Identify various Static Seals and their applications.*

Potential Elements of the Performance:

- Understand what a static seal is
- Understand what a Gasket is
- Understand what an O-Ring is
- Explain the different types of Sealants
- Demonstrate how to install and remove static seals

6. *Identify various Dynamic Seals and their applications.*

Potential Elements of the Performance:

- Understand what a dynamic seal is
- Identify the various contact Seals
- Identify the various clearance Seals
- Demonstrate how to install and remove dynamic seals

7. *Understand Lubrication principles and the properties of Oil and Grease.*

Potential Elements of the Performance:

- Understand the properties of oil
- Understand the properties of grease
- Understand oil lubrication
- Understand grease lubrication
- Demonstrate the safe handling of lubricants

III. TOPICS:

1. FRICTION BEARINGS
2. ANTI-FRICTION BEARINGS
3. INSTALLATION AND REMOVAL OF BEARINGS
4. MAINTENANCE OF BEARINGS
5. STATIC SEALS
6. DYNAMIC SEALS
7. LUBRICATION

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:
Millwright Manual/ Industrial Trades Handbook
Keyed lock, Safety boots, Safety glasses.

V. EVALUATION PROCESS/GRADING SYSTEM:

- Attendance 15% (12/15) **see special notes**
- Assignments 30%
- Tests 55%

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%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% 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:

Attendance:

A student who attends less than 80%(12) classes will receive a zero(0) for 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 been closed, the learning process has begun. Late arrivers will not be granted admission to the room.

VII. COURSE OUTLINE ADDENDUM:

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