



# COURSE OUTLINE

## MCH0253

Prepared: Howard Gray    Approved: Corey Meunier

<b>Course Code: Title</b>	MCH0253: BEARINGS, SEALS AND LUBRICATION						
<b>Program Number: Name</b>	1120: COMMUNITY INTEGRATN						
<b>Department:</b>	C.I.C.E.						
<b>Semester/Term:</b>	18W						
<b>Course Description:</b>	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.						
<b>Total Credits:</b>	2						
<b>Hours/Week:</b>	2						
<b>Total Hours:</b>	30						
<b>Course Evaluation:</b>	Passing Grade: 50%, D						
<b>Evaluation Process and Grading System:</b>	<table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Assignments</td> <td>30%</td> </tr> <tr> <td>Tests</td> <td>70%</td> </tr> </tbody> </table>	Evaluation Type	Evaluation Weight	Assignments	30%	Tests	70%
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Assignments	30%						
Tests	70%						
<b>Books and Required Resources:</b>	Millwright Manual by British Columbia Publisher: Queens Printer ISBN: 0-7718-9473-2 Safety Boots, Safety Glasses						
<b>Course Outcomes and Learning Objectives:</b>	Upon successful completion of this course, the CICE student, with the assistance of a Learning Specialist will acquire varying levels of skill development relevant to the following learning outcomes:  <b>Course Outcome 1.</b>						



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Upon successful completion of this course, the student will be able to identify the various styles and uses of Friction type bearings.:

### **Learning Objectives 1.**

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

### **Course Outcome 2.**

Upon successful completion of this course, the student will be able to identify the various styles of anti-friction type bearings.

### **Learning Objectives 2.**

- 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

### **Course Outcome 3.**

Upon successful completion of this course, the student will be able to demonstrate installing and removing bearings

### **Learning Objectives 3.**

- Perform shaft and housing checks
- Install bearings on various types of fits
- Use different accessories to remove bearings
- Install tapered-bore bearings



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- Calculate and correctly set bearing clearances
- Install and remove Pillow blocks of different designs

### **Course Outcome 4.**

Upon successful completion of this course, the student will be able to Demonstrate the maintenance of all types of Bearings and Housing.

### **Learning Objectives 4.**

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

### **Course Outcome 5.**

Upon successful completion of this course, the student will be able to Identify various Static Seals and their applications

### **Learning Objectives 5.**

- 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

### **Course Outcome 6.**

Upon successful completion of this course, the student will be able to Identify various Dynamic Seals and their applications

### **Learning Objectives 6.**

- Understand what a dynamic seal is



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- Identify the various contact Seals
- Identify the various clearance Seals
- Demonstrate how to install and remove dynamic seals

### Course Outcome 7.

Upon successful completion of this course, the student will Understand Lubrication principles and the properties of Oil and Grease.

### Learning Objectives 7.

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

#### CICE Modifications:

#### Preparation and Participation

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

**A.** Further modifications may be required as needed as the semester progresses based on individual student(s) abilities and must be discussed with and agreed upon by the instructor.

#### **B. Tests may be modified in the following ways:**

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual



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clues.

4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

**C. Tests will be written in CICE office with assistance from a Learning Specialist.**

***The Learning Specialist may:***

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

**D. Assignments may be modified in the following ways:**

1. Assignments may be modified by reducing the amount of information required while maintaining general concepts.
2. Some assignments may be eliminated depending on the number of assignments required in the particular course.

***The Learning Specialist may:***

1. Use a question/answer format instead of essay/research format
2. Propose a reduction in the number of references required for an assignment
3. Assist with groups to ensure that student comprehends his/her role within the group
4. Require an extension on due dates due to the fact that some students may require additional time to process information
5. Formally summarize articles and assigned readings to isolate main points for the student
6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment

**E. Evaluation:**

Is reflective of modified learning outcomes.

**NOTE:** Due to the possibility of documented medical issues, CICE students may require alternate methods of evaluation to be able to acquire and demonstrate the modified learning outcomes

**Date:**

Wednesday, September 6, 2017





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Please refer to the course outline addendum on the Learning Management System for further information.