



COURSE OUTLINE: MCH0253 - BEARINGS SEALS LUBRI

Prepared: Howard Gray

Approved: Martha Irwin, Chair, Community Services and Interdisciplinary Studies

Course Code: Title	MCH0253: BEARINGS, SEALS AND LUBRICATION
Program Number: Name	1120: COMMUNITY INTEGRATN
Department:	C.I.C.E.
Semesters/Terms:	19W, 19S
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.
Total Credits:	2
Hours/Week:	2
Total Hours:	30
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Essential Employability Skills (EES) addressed in this course:	<p>EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.</p> <p>EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.</p> <p>EES 3 Execute mathematical operations accurately.</p> <p>EES 4 Apply a systematic approach to solve problems.</p> <p>EES 5 Use a variety of thinking skills to anticipate and solve problems.</p> <p>EES 6 Locate, select, organize, and document information using appropriate technology and information systems.</p> <p>EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.</p> <p>EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.</p> <p>EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.</p> <p>EES 10 Manage the use of time and other resources to complete projects.</p> <p>EES 11 Take responsibility for ones own actions, decisions, and consequences.</p>
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00



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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.

Books and Required Resources:

Millwright Manual by British Columbia
 Publisher: Queens Printer
 ISBN: 0-7718-9473-2
 Safety Boots, Safety Glasses

Course Outcomes and Learning Objectives:

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:

Course Outcome 1	Learning Objectives for Course Outcome 1
Upon successful completion of this course, the student will be able to Identify the various styles and uses of Friction type bearings.:	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
Course Outcome 2	Learning Objectives for Course Outcome 2
Upon successful completion of this course, the student will be able to Identify the various styles of anti-friction type bearings.	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	Learning Objectives for Course Outcome 3
Upon successful completion of this course, the student will be able to Demonstrate installing and removing bearings	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
Course Outcome 4	Learning Objectives for 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.	Understand the importance of keeping bearings clean Understand the importance of keeping bearings in good condition Apply good maintenance practices
Course Outcome 5	Learning Objectives for Course Outcome 5
Upon successful completion of this course, the student	Understand what a static seal is Understand what a Gasket is

	will be able to Identify various Static Seals and their applications	Understand what an O-Ring is Explain the different types of Sealants Demonstrate how to install and remove static seals
	Course Outcome 6	Learning Objectives for Course Outcome 6
	Upon successful completion of this course, the student will be able to Identify various Dynamic Seals and their applications	Understand what a dynamic seal is Identify the various contact Seals Identify the various clearance Seals Demonstrate how to install and remove dynamic seals
	Course Outcome 7	Learning Objectives for Course Outcome 7
	Upon successful completion of this course, the student will Understand Lubrication principles and the properties of Oil and Grease.	Understand the properties of oil Understand the properties of grease Understand oil lubrication Understand grease lubrication Demonstrate the safe handling of lubricants

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight	Course Outcome Assessed
Assignments	30%	
Tests	70%	

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 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:

February 5, 2019

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

