Course Information Form (CIF)

Course Code: MFX 174

Course Title: Mechanical Drives V

Department: Applied Sciences and Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 47.0303
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 0.5-1-1
Credit Hour Distribution:

Lecture: 0.5	Lab: 1	Clinical: 0	**Total: 1**

General Course Information

Catalog Description

Plain bearings, ball bearings, and roller bearings.

General Course Objectives

Students will gain industry knowledge of plain bearings, ball bearings, and roller bearings.

Minimum Placement Levels

English	Reading	Math
Placement into ENG 098	Placement into CCS 098	Placement into MAT 059

Prerequisites

Credit in MFX 173

Methods of Evaluation

5 quizzes.

Instructional Materials and Additional Supplies

Amatrol Course Code

Course Content

General Learning Outcomes (GLOs)

- Critical Thinking and Information Literacy: Students will demonstrate the ability to evaluate perspectives, evidence, and implications, and to locate, assess, and use information effectively.
- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Solid Plain Bearing	1. Describe the function of three types of plain bearings and give an application. 2. Describe the four functions of a bearing. 3. Describe the four components of a plain bearing assembly. 4. Describe the operation of a plain bearing. 5. Describe the construction of two types of plain journal bearings and give an application of each. 6. Describe two ways to install a sleeve bearing. 7. Install and adjust a solid bearing using a hammer and mandrel.	0.5	1	0
Plain Bearing Lubrication	1. Describe four types of plain bearing lubrication and give an application of each. 2. Describe how to select a lubrication system for a plain bearing system. 3. Select a lubrication system for a plain bearing system. 4. Install and adjust a Type I bearing using an arbor press. 5. Lubricate a plain bearing using the oil cup method.	0.5	1	0
Plain Bearing Selection	1. Describe how plain bearings are specified. 2. Identify the size and type of plain bearing given a specification. 3. Describe seven important characteristics of plain bearing materials. 4. Describe the properties of six plain bearing materials and give an application of each. 5. Describe how to calculate the PV factor of a bearing for a given application. 6. Describe how to select a plain bearing for a given installation. 7. Select a plain bearing for a given application. 8. Describe how to measure and determine shaft clearance for a given plain bearing application. 9. Determine the shaft clearance for a given plain bearing application.	0.5	1	0
Plain Bearing Maintenance and Troubleshooting	1. Describe eight preventive maintenance steps for plain bearings. 2. Describe how to inspect and troubleshoot a plain bearing system. 3. Troubleshoot a plain bearing installation.	1	2	0
Introduction to Antifriction Bearings	1. Describe the function of an antifriction bearing. 2. List two types of antifriction bearings and give an application of each. 3. Describe the construction and function of five parts of a ball bearing. 4. Describe the operation of five types of ball bearings and give an application of each. 5. Describe how a ball bearing is mounted. 6. Describe how to handle an antifriction bearing. 7. Describe how to clean an antifriction bearing. 8. Handle and clean an antifriction bearing.	0.5	1	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Ball Bearing Identification	1. Describe how ball bearings are specified. 2. Identify a ball bearing given a part number. 3. Describe how to identify a ball bearing given a sample. 4. Identify a ball bearing given a sample.	0.5	1	0
Mechanical Bearing Installation	1. Describe two methods of mechanically mounting a ball bearing and give an advantage of each. 2. Describe how to mount a ball bearing using an arbor press and give an advantage. 3. Install a ball bearing on a shaft using an arbor press. 4. Describe how to remove a ball bearing from a shaft using an arbor press and give an advantage. 5. Remove a ball bearing from a shaft using an arbor press.	0.5	1	0
Temperature Bearing Installation	1. Describe four methods of thermal mounting a bearing and give an advantage of each. 2. Describe the use of temperature-indicating crayons. 3. Install a ball bearing on a shaft using a bearing heater. 4. Describe seven types of ball bearing retainers. 5. Describe how to install and align a deep groove ball bearing system. 6. Install and align a deep groove ball bearing system. 7. Describe the operation of two types of bearing pullers. 8. Describe how to use a bearing puller to remove a ball bearing from a shaft. 9. Remove a ball bearing from a shaft using a bearing puller. 10. Describe three methods of destructive bearing removal and give an application.	0.5	1	0
Roller Bearing Identification	1. Describe the operation of four types of roller bearings and give an application of each. 2. Describe the function of the four components of a tapered roller bearing. 3. Describe how tapered roller bearings are specified. 4. Describe how to identify a tapered roller bearing given a sample. 5. Identify type and size of a tapered roller bearing given a sample.	0.5	1	0
Mechanical Installation	1. Describe four methods of installing a roller bearing and give an application of each. 2. Describe how to install a roller bearing onto a shaft using an arbor press. 3. Install a roller bearing onto a shaft using an arbor press. 4. Describe how to install a roller bearing into a housing using a bearing press kit. 5. Install a roller bearing into a housing using a bearing press kit. 6. Describe four methods of removing a roller bearing and give an application of each. 7. Describe how to use a bearing separator to remove a roller bearing from a shaft. 8. Use a bearing separator to remove a roller bearing from a shaft. 9. Describe how to use an internal bearing puller to remove a roller bearing cup from a housing. 10. Use an internal bearing puller to remove a roller bearing cup from a housing. 11. Describe how to remove a roller bearing cup from a housing using a bearing press kit. 12. Use a bearing press kit to remove a bearing cup from a housing.	0.5	1	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Temperature Installation	1. Describe four methods of temperature mounting a tapered roller bearing. 2. Describe how to install a roller bearing using hot temperature mounting. 3. Describe two methods of packing a roller bearing with grease. 4. Install a roller bearing using hot mounting. 5. Pack a tapered roller bearing with grease. 6. Describe how to install and adjust a tapered roller bearing system. 7. Describe how to use three types of locknuts. 8. Install and align an indirect mount tapered roller bearing system.	0.5	1	0
Roller Bearing Applications	1. Describe three types of roller bearing retaining methods. 2. Describe the three types of roller bearing mounting methods. 3. Describe how bearing adjustment is affected by operating temperatures. 4. Install and align a direct mount tapered roller bearing system using a cup follower retainer. 5. Measure the change in shaft end play due to operation heat. 6. Install and align a fixed and floating tapered roller bearing system using an end plate retainer.	0.5	1	0
Angular-Contact Bearings	1. Describe the construction of an angular contact bearing. 2. Describe how to mount an angular contact bearing. 3. Mount and remove an angular contact bearing. 4. Describe how to preload an angular contact bearing and give an application. 5. Describe the operation of three configurations of duplex bearings and give an application of each. 6. Install and adjust angular contact bearings.	0.5	1	0
Bearing Lubrication	1. Describe two common types of antifriction bearing lubrication. 2. Describe how to select a lubricant for an antifriction bearing. 3. Select a lubricant for an antifriction bearing for a given application. 4. Describe eight systems of antifriction bearing lubrication and give an advantage of each.	0.5	1	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
7.5	15	0