هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	Machine Elements
Course Code:	242 MMET
Program:	Mechanical Maintenance Engineering Technology (MMET)
Department:	Mechanical Engineering Technology (MET)
College:	College of Applied Industrial Technology (CAIT)
Institution:	Jazan University
Version:	T-104 - 2022
Last Revision Date:	2023

Table of Contents:

A. General Information about the Course

Course Identification								
1. Credit Hours: 2								
2. Course Type:								
a. University		College		Department	☑	Track		Others
b. Required	☑	Elective						
3. Level/year at which this course is offered:				5th Level		2nd Year		

4. Course General Description

This course introduces to the students the functions of the main elements of mechanical machinery. Reading blueprints, selection and sizing of the major mechanical elements are also presented. It aims to equip the mechanical technical engineering students with the fundamentals of mechanical machinery components and give them necessary skills to prepare complete, concise, and accurate calculation steps for installing and replacing machine elements. The course starts with revision about forces, torques, power, and stress analysis.

The course is introduced through 1 hr theoretical and 2 hrs practical classes weekly.

5. Pre-requirements for this course (if any): 112 MMET
6. Co- requirements for this course (if any): -------
7. Course Main Objective(s):

Machine elements are the basic mechanical elements or parts used as building blocks of most machines, e.g. screw threads, wheels, axles, pulleys, bearings, and gears. Blue print reading of the commonly-used machine elements is the main objective of this course.

The objectives of this course is teaching the students how to specify the main parts of mechanical machinery via its blueprint, as well as how to justify the existence of a certain mechanical element inside a certain machinery.

1. Teaching Mode: (Mark all that apply)

No	Mode of Instruction	Contact Hours	Percentages
1	Traditional classrooms	0	0.0%
2	E-learning	0	0.0%
3	Hybride * Traditional classrooms * E-learning	33	100.0%
4	Distance learning	0	0.0%

2. **Contact Hours (based on the academic semester)**

No	Activity	Contact Hours
1	Lectures	11
2	Laboratory/Studio	22
3	Field	0
4	Tutorial	0
5	Others (specify)	0
	Total	**33**

Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes (CLOs)	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Differentiate among different categories of common machine elements regarding their functionality, use, and installation	K1.2	Structured Lectures Questioning	Quizzes Exams
2.0	**Skills**			
2.1	Interpret blueprint symbols and common abbreviations of drawings, then inferring its performance and codes with proper selection of basic elements of a drawing of machine elements	S1.1 S2.1	Structured Lectures Worked Examples	Quizzes Exams
2.2	Calculate the loads, stresses, power transmitted, and life of system components to verify their ability to function properly with safety consideration	S2.2 S4.1	Structured Lectures Questioning	Quizzes Exams
3.0	**Values, autonomy, and responsibility**			
3.1	Collect essential information of a given machine element in the lab by using multiple means and sources	V2.2	Worked Examples Collaborative Learning	Oral Presentation
3.2	Show independent timeliness work in classroom with effective contribution with classmates	V1.3	Collaborative Learning Collaborative Learning	Oral Presentation

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to power transmission and relation between power and torque. Revision about applied forces and reactions as well as types of stresses.	3
2	Mechanical Sealing, and types and uses of gaskets, O-rings, stuffing boxes, seals, and sealing devices.	3
3	Transmission Systems: Shafts, keys, and blueprint reading.	3
4	Blueprint reading, symbols, and fits and tolerances	6
5	Journal bearings, rolling contact bearings, fasteners and lubricants.	3
6	Couplings, clutches, and brakes	3
7	Transmission Systems: Introduction to belt drives and their nomenclature	3
8	Transmission Systems: Types of gears and gearboxes, and state their uses.	3
9	Transmission Systems: Chains and chain drives, and state their uses.	3
10	Helical spring (tension and compression) and leaf springs	3
	Total	**33**

D. Students Assessment Activities

No	Assessment Activities	Assessment Timing (In Week No)	Percentage of Total Assessment Score
1	Class Activity 1	Week 2	3%
2	Class Activity 2	Week 3	3%
3	Class Activity 3	Week 4	2%
4	Class Activity 4	Week 5	3%
5	Class Activity 5	Week 6	4%
6	Mid Term	Week 7	20%
7	Class Activity 6	Week 8	3%
8	Class Activity 7	Week 9	2%
9	Practical	Week 10	10%
10	Participation	All Weeks	10%
11	Final Exam	As Scheduled	40%

* Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1 References and Learning Resources

Essential References	1	Mott R.L., Machine Element in Mechanical Design, Prentice all, 2003
Supportive References	1	PowerPoint Lectures printout
	2	Shigley E. Mischke C. R., Standard Handbook of Machine Design, McGraw-Hill Book Cmpany, 1996.
Electronic Materials	1	Not Exist
Other Learning Materials	1	Not Exist

2 Required Facilities and Equipment

Items	Resources
Facilities (Classrooms, Laboratories, Exhibition rooms, Simulation Room, etc.)	Suitable Classroom Suitable Lab Suitable number of chairs Whiteboard
Technology Equipment (Projector, Smart Board, Software)	Smart Board
Other Equipment (Depending on the nature of the specialty)	Not Required

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Method
Effectiveness of Teaching	Student	Indirect
	Course Instructor (Faculty)	Direct
Quality of Learning Resources	Program Coordinator	Indirect
	Head of Department	Indirect
	Quality Auditor	Indirect
The extent to which CLOs have been achieved	Course Instructor (Faculty)	Direct
	Quality Auditor	Direct
Other	Course Coordinator	Indirect
	Quality Auditor	Indirect

G. Specification Approval Data

Council/Committee	Mechanical Engineering Technology (MET)
Reference Number	CAITMET20232
Date	12/3/2023