هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	Metrology and Quality Control
Course Code:	223 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: 3								
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

Identify techniques to minimize the errors in measurement. Identify methods and devices for measurement of length, angle, and gear and thread parameters, surface roughness and geometric features of parts. Choose limits for plug and ring gauges. Explain methods of measurement in modern machineries.

5. Pre-requirements for this course (if any): 121 MMET

6. Co- requirements for this course (if any): -------

7. Course Main Objective(s):

1. Identify techniques to minimize the errors in measurement
2. Identify methods and devices for measurement of length, angle, and gear and thread parameters, surface roughness and geometric features of parts.
3. Choose limits for plug and ring gauges.
4. Explain methods of measurement in modern machineries
5. Select quality control techniques and its applications

1. **Teaching Mode: (Mark all that apply)**

No	Mode of Instruction	Contact Hours	Percentages
1	Traditional classrooms	44	100.0%
2	E-learning		0.0%
3	Hybride * Traditional classrooms * E-learning		0.0%
4	Distance learning		0.0%

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

No	Activity	Contact Hours
1	Lectures	22
2	Laboratory/Studio	22
3	Field	
4	Tutorial	
5	Others (specify)	
	Total	**44**

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	Describe the basic principle of mechanical metrology. Recognise the local & international standard governing mechanical measurements.	K1.2	Structured Lectures Worked Examples	Homework Exams
2.0	**Skills**			
2.1	Identify and apply various linear and angular measuring instruments	S1.2	Structured Lectures Worked Examples	Homework Exams
2.2	Explain special gauges like Go-No GO, radius gauge, feeler gauge etc.	S2.1	Structured Lectures Worked Examples	Homework Exams
2.3	Explain tolerance, limits of size, fits, geometric and position tolerances and gauge design	S2.3	Structured Lectures Worked Examples	Homework Exams
2.4	Experiments to find out various dimensions of mechanical parts using precision instruments	S4.1	Structured Lectures Worked Examples	Homework Exams
3.0	**Values, autonomy, and responsibility**			
3.1	Participate in Team work, Timely completion of Assignments and experimental reports	V1.3	Collaborative Learning Questioning	Report Presentation
3.2	Develop an ability of problem solving and decision making by identifying and analyzing the cause for variation and recommend suitable corrective actions for quality improvement	V2.1	Questioning Feedback	Oral Homework

C. Course Content

No	List of Topics	Contact Hours
1	Introduction : What is metrology? Need of inspection, Objective of Metrology, Method of measurement, Precision and Accuracy, Some important terminologies used in	3
2	Linear Measurement : Introduction, Non precision measuring equipment and their uses, Precision measuring equipment and their uses.	4
3	Introduction, Line standard measuring devices, Face standard measuring devices, Measurement of inclines, Angle Comparators.	4
4	Special Gauges : Introduction, Slip gauge, Feeler Gauge, Radius Gauge, Plug Gauge	3
5	Introduction, Limits and Allowance, Fits- Hole basis System & Shaft Basis System, Geometrical Tolerances.	8
6	Lab Experiments	22
	Total	**44**

D. Students Assessment Activities

No	Assessment Activities	Assessment Timing (In Week No)	Percentage of Total Assessment Score
1	Assignment 1	Week 3	5%
2	Assignment 2	Week 5	5%
3	Assignment 3	Week 7	5%
4	Assignment 4	Week 9	5%
5	Lab. Experiments.	All Weeks	15%
6	Self Study Report and Viva Voce	Week 10	5%
7	Formative Assessment	Week 7	20%
8	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	Connie Dotson, Roger Harlow and Richard L. Thompson, "Fundamentals of dimensional metrology", Delmar Cengage Learning, 5th edition 2006.
Supportive References	1	Class Notes
Electronic Materials	1	Audio/Video
Other Learning Materials	1	None

2 Required Facilities and Equipment

Items	Resources
Facilities (Classrooms, Laboratories, Exhibition rooms, Simulation Room, etc.)	Suitable Lab Exhibition Room
Technology Equipment (Projector, Smart Board, Software)	
Other Equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality

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

G. Specification Approval Data

Council/Committee	Mechanical Engineering Technology (MET)
Reference Number	
Date	