Course Specification

(Bachelor)

Course Title: Mechanical Drawing	
Course Code: 101-MEC-3	
Program: Bachelor of Science in Engineering	
Department: Mechanical Engineering	
College: College of Engineering	
Institution: Najran University	
Version: 1.0	
Last Revision Date: 02/28/2024	

Table of Contents

A. General information about the course:

1. 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: Second Year \ Level 3

4. Course general Description:

Classification of Drawings, IS Codes for Machine Drawing, Types of lines and Dimensioning, Principle of First Angle Projection, Drawing of Machine Elements in First Angle Projections, Selection of Views, Sectional Views (2 Sheets). Screwed Fasteners: Thread Nomenclature, Forms of Thread, Representation of Threads, Bolted Joints, Locking Arrangement of Nuts (2 Sheets). Keys and Cotters and Pin Joints (1 Sheet), Shaft Couplings (1 Sheet), Riveted Joints (1 Sheet), Assembly Drawing (1 Sheet). Part and Assembly Drawing (2 Sheets), Production Drawing (1 Sheet). Computer Aided Drafting (2 Sheets)

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

121-GEC-3 (Engineering Drawing)

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

NIL

7. Course Main Objective(s):

1.   Draw mechanical elements.
2.   Apply geometrical and dimensional tolerances.
3.   Practice assembly drawings.
4.   Use drawing software packages for drawing both mechanical elements and assembly drawings.
5.   Make handout drawings of sketches.
6.   Use Auto Cad computer drafting software to make fundamentals of computer graphics.

7. Illustrate Fits and tolerance; Machine components; Structural drawing; assembly drawing.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	15
2.	Laboratory/Studio	45
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Explain the Fundamentals computer graphics and the use of Auto Cad computer drafting software	1	TS:1-Interactive lectures using PowerPoint slides TS:2- Engaging the students in problem-based	-Test performance evaluation -Evaluation of participation in discussion and

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			learning through tutorials TS: 3 – Associating the topics in each chapter with the CLO. TS:4 – Conducting quizzes by the each chapter TS:5 – Giving more example programs in the lecture TS: 6 – Discussion with the students in the class hours	group assignments
1.2	Apply geometrical & dimensional tolerances and Draw machine components	7	TS:1-Interactive lectures using PowerPoint slides TS:2- Engaging the students in problem-based learning through tutorials TS: 3 – Associating the topics in each chapter with the CLO. TS:4 – Giving more assignment by the each chapter TS:5 – Giving more example programs in the lecture TS: 6 – Discussion with the students in the class hours	-Test performance evaluation -Evaluation of participation in discussion and group assignments
...				
2.0	Skills			

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.1	Investigate several methods in problems solving, reasoning for each problem solved	2	TS:1-Interactive lectures using PowerPoint slides TS:2- Engaging the students in problem-based learning through tutorials TS: 3 – Associating the topics in each chapter with the CLO. TS:4 – Conducting quizzes by the each chapter TS:5 – Giving more example programs in the lecture TS: 6 – Discussion with the students in the class hours	Locally Developed Exams such as Quiz, Mid & Final Exams with scoring rubrics •Assignments involving critical and logical thinking questions •Quizzes
2.2	Reasoning in solving a problem systematically.	6	TS:1-Interactive lectures using PowerPoint slides TS:2- Engaging the students in problem-based learning through tutorials TS: 3 – Associating the topics in each chapter with the CLO. TS:4 – Conducting quizzes by the each chapter TS:5 – Giving more example programs in the lecture	Locally Developed Exams such as Quiz, Mid & Final Exams with scoring rubrics •Assignments involving critical and logical thinking questions •Quizzes

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			TS: 6 – Discussion with the students in the class hours	
...				
3.0	**Values, autonomy, and responsibility**			
3.1	**Work in a group and independently and Manage resources, time and other members of the group**	5	TS:1-Interactive lectures using PowerPoint slTS:2- Engaging the students in problem-based learning through tutorials TS: 3 – Associating the topics in each chapter with the CLO. TS:4 – Conducting midterm and Final Exam by the each chapter TS:5 – Giving more example programs in the lecture TS: 6 – Discussion with the students in the class hour sides	**Locally Developed Exams Quiz, Mid & Final Exams with scoring rubrics** **•Assignments involving critical and logical thinking questions** **•Quizzes such as**
3.2	**Use the computer for analyzing & processing the experimental data and Communicate results of work to others**	3	TS:1-Interactive lectures using PowerPoint slides TS:2- Engaging the students in problem-based learning through tutorials TS: 3 – Associating the topics in each	**Locally Developed Exams such as Quiz, Mid & Final Exams with scoring rubrics** **•Assignments involving critical and**

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			chapter with the CLO. TS:4 – Conducting midterm and Final Exam by the each chapter TS:5 – Giving more example programs in the lecture TS: 6 – Discussion with the students in the class hours	logical thinking questions •Quizzes

C. Course Content

No	List of Topics	Contact Hours
1.	Fundamentals of computer graphics and the use of Auto Cad computer drafting software	12
2.	Geometrical and dimensional tolerances.	8
3.	Applications on mechanical elements (bolts).	8
4.	Applications on mechanical elements (riveted joints).	6
5.	Applications on mechanical elements (shafts and keys).	6
6.	Applications on mechanical elements (gears).	8
7.	Applications on mechanical elements (coupling).	4
8.	Applications on assembly and working drawings (valves, presses etc.)	8
	Total	60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	1-10	20%
2.	Mid-term	6 & 8	20%
3.	labs	1-10	10%
...	Final exam	15	50%

*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	"A Manual of engineering drawing Practice", C. H. Simons and E. E. Maguire, Hodder and Stoughton. "Manual of Auto cad 2012"
Supportive References	Geometric and Engineering Drawing" K . Morling, Third Edition, Taylor & Francis,2010. • "Machine Drawing" K.L. Narayana, P. Kannaiah, and K. Venkata Reddy, New Age International,2006
Electronic Materials	Online custom books
Other Learning Materials	Other learning material such as computer-based programs/CD, professional standards or regulations and software.

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Classrooms and laboratories**
Technology equipment (projector, smart board, software)	**AutoCAD Software**
Other equipment (depending on the nature of the specialty)	**Desktop Computer**

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Program Leaders and Peer Reviewer**	**Direct, Indirect**
Effectiveness of Students assessment	**Students & Faculty**	**Direct and Indirect**
Quality of learning resources	**Students & Faculty**	**Direct and Indirect**
The extent to which CLOs have been achieved	**Students & Faculty**	**Direct and Indirect**
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	DEPARTMENT OF MECHANICAL ENGINEERING
REFERENCE NO.	
DATE	02/28/2024