

MNE2016: ENGINEERING GRAPHICS

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Engineering Graphics

Subject Code

MNE - Mechanical Engineering

Course Number

2016

Academic Unit

Mechanical Engineering (MNE)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

MBE2016 Engineering Graphics

Exclusive Courses

MBE2107/MNE2107 Basics of Mechanical Engineering or
BME3016 Biomedical Engineering CAD

Part II Course Details

Abstract

The aim of this course is to introduce to the students basic concepts and use of engineering drawing in the design and mechanical field. Upon successfully completing this course, students should acquire the following learning outcomes:

- Use the medium of drawings in engineering communications.
- Describe the general principles involved in the use of Engineering Drawing.
- Demonstrate skills in interpreting, and producing engineering drawings accurately and efficiently; and
- Demonstrate skills in computer-aided-draughting to produce detailed 2D and 3D drawings.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if DEC-A1 DEC-A2 DEC-A3 app.)		
1	Use the medium of drawings in engineering communications.		x	
2	Describe the general principles involved in the use of Engineering Drawing.		x	
3	Demonstrate skills in interpreting, and producing engineering drawings accurately and efficiently.		x	
4	Demonstrate skills in computer-aided-draughting to produce detailed 2D and 3D drawings.		x	

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

TLAs	Brief Description	CILO No.	Hours/week (if applicable)	
1	Lecture	Explain key concepts, such as orthographic projection, etc., related to engineering communications and drawing.	1, 2, 3	1.5 hrs/week
2	Laboratory Work	Learn and use CAD software to do assignments.	3, 4	3 hrs/week for 12 weeks only

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Tests	1, 2, 3	40	2-3 tests during the second half of the semester
2	Assignments	3, 4	60	7-9 computer-based drawing assignments

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)**Assessment Task**

1. Tests

Criterion

- 1.1 Ability to use the medium of drawings in engineering communications.
- 1.2 Ability to describe the general principles involved in the use of engineering drawing.
- 1.3 Ability to demonstrate skills in interpreting, and producing engineering drawings accurately and efficiently.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

2. Assignments

Criterion

- 2.1 Ability to demonstrate skills in interpreting, and producing engineering drawings accurately and efficiently.
- 2.2 Ability to demonstrate skills in computer-aided-draughting to produce detailed 2D and 3D drawings.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Use of Computer for Engineering Design Drawing. Conventional Representation of Standard Features. Orthographic Projection: 1st and 3rd angle. Isometric View and Oblique Projection. Standard Symbols on a Working Drawing. Dimensioning and tolerance applications. Sectioning. Assembly Drawing. Solid Modelling. 2D and 3D computer-aided-draughting software.

Reading List**Compulsory Readings**

Title	
1	M.A. Parker and F. Pickup, Engineering Drawing with Worked Examples, Part 1, Stanley Thornes Ltd.

Additional Readings

Title	
1	Giesecke, F.E., Mitchell, A., Spencer, H.C., Hill, I.L., Dygdon, J.T., Novak, J.E., Loving, R.O., Lockhart, S., Johnson, C., Technical Drawing with Engineering Graphics, Pearson.
2	Bethune, D.B., Engineering Graphics with AutoCAD 2017, Pearson.
3	Howard, W., Musto, J., Introduction to Solid Modeling Using SolidWorks 2016, McGraw Hill.
4	Bertoline, G., Wiebe, E., Hartman, N., Ross, W., Fundamentals of Graphics Communication, McGraw Hill.