SYLLABUS: ENGINEERING DRAWING / CAD 1

Date / Revision	23 May 2015 / 02 May 2017 / PP
Faculty	Engineering
Study Programs	AVE, AUE, MEE, INE, MTE

SUBJECT: Engineering Drawing / CAD 1

1 Basic Information

1.01	**Subject Name**	**Engineering Drawing / CAD 1**
1.02	**Semester**	1
1.03	**Level**	1
1.04	**SKS**	2
1.05	**Mandatory / Curriculum**	Mandatory / F-08
1.06	**Subject Code**	ENDR
1.07	**Subject Code**	ENG-F-ENDR-1108
1.08	**Year**	2017 (7)
1.09	**Quality Control**	Final Test, see evaluation
1.10	**Limitations**	Min 12 and Max 32 students in one class
1.11	**Combined with**	AVE, AUE, MEE, INE, MTE
1.12	**Perquisite**	None
1.13	**Responsible**	Dipl. Ing.- Wahjoe Goeritno, MSi
1.14	**Revision**	15-08-2017/MaS

2 Description of Subject

This course is an introduction to the students about the basic and standard for drawing technique, including sizing and view and projection drawing. The drawing technique is emphasized in how to draw sketch an object graphically, and projection point from surface and arch lines, and projection drawing from different point of view. It is emphasized also to read and understand the drawing, all the meaning of symbols, tolerance, lines etc. Besides that, the students is given the requirements technical drawing the mechanical engineering objects such as block, shaft, gear. At the end, the students is capable of sketch drawing the mechanical part.

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3 Objectives

- Increase ability to communicate with people
- Learn to sketch and take field dimensions.
- Learn to take data and transform it into graphic drawings.
- Learn basic engineering drawing formats
- Learn basic Computer Aided Design skills.
- Impart relevant skills and knowledge for independent learning of other subjects that require such skills and knowledge.

4 Competency

After having the course, students are expected to:

- Have basic knowledege of technical drawing based on ISO Standard
- Differentiate the First angle projection and third angle projection.
- Have undertsanding the meaning of lines, tolerance, symbols, surface roughness.
- sketch the simple workpiece for production.
- read and understand the technical drawing in American or European view..

5 Learning Approach / Methodology

- Lectures/ Class contact (time-tabled) supplemented with interactive questions and answers;
- Tutorial/Practice Classes: preview of materials, revision;
- Student Study Effort: homework/assignment; preparation for test/quizzes/ examination.

6 Evaluation

5.1	**Absence maximum**	25%
5.2	**Participation in Discussion**	05 Points
5.3	**Homework / Classwork**	05 Points
5.4	**Presentation /Simulation**	10 Poins
5.5	**Daily Quiz**	20 Points
5.6	**Final Examination**	60 Points
	Total	100 Points

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7 Text Book and Reference

1	**Main Text Book:** "Technical Drawing", **Authors**: Giesecke, Mitchell, Spencer, Hill, Dygdon, Novak, **Publisher**: Pearson, Prentice Hall, **ISBN**:0-13-178446-3
2	**Supplement Textbooks:** • "Technical Drawing", **Publisher**: ISO Standard Handbook, **ISBN**: 178446 – 3

8 Content / Topics of Lecture

Week	Content/ Topics of Lecturing	Text Book	Remark
1	**Intro duction to Technical Drawing Standard:** • Technical Drawing • ISO Standard • Paper Size, Lay out, Line, Scale, Title Block, Application of lines, drawing folding.		
2	**View and Projection:** • View • Projection • First Angle Projection • Third Angle Projection		
3	**Auxialary View:** • Special representation of workpiece, • Simplified representation.		Quiz
4	**Section:** • Full section, Half section, Local section. • Hatch, type of hatch		
5-6	**Dimensioning:** • Projection lines, Dimension lines, Leader lines, Termination and Origin Indication. • Chain dimension, Parallel dimension, Combined dimension, Coordinates dimension. • Chord, Arc, Angle, Chamfer, Countersink • Dimension of Cylinder part, cubical part, sheet metal part.		Quiz
7	**Tolerance:** • Classification of tolerance, Linear tolerance, Angular Tolerance, Special tolerance. • Tolerance indication. Bilateral and Unilateral tolerance		Quiz
8	**MIDTERM SEMESTER BREAK**		

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9	**Tolerance and Fits:** IT tolerance. Types of fits. Hole basis and Shaft basis. Calculation of fits		
10	**Machining Symbol and Surface Roughness:** • Average roughness Ra, The symbol of roughness, Symbol of direction. • Machining symbol, Ra class. • Indication techniques on drawing.		
11	**Geometrical Tolerance:** • Form tolerance; Orientation tolerance; Location tolerance; Run-out tolerance		Quiz
12	**Standards Part:** • How to represent: Fastener, bolt and nut; Thread indication; Bearing; Gear; Spring; Seal; Chain,		
13	**Welding Drawing:** • Welding symbols. Indication on drawing. • Fillet weld, Butt weld		
14	**Part Drawing:** • Detail drawing:Cylindrical part, Cubical part, Sheet metal part.		Quiz
15	**Assembly drawing:** • Material description, part number, drawing number, Bill of material.		
16	**Final Examination**		

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