

SYLLABUS

Date / Revision 15 August 2017 / Rev.02 15.08.17 /WaG
Faculty Engineering
Study Program MEE, AUE

SUBJECT: Computer Aided Design – CAD 2

1 Basic Information

1.01	Subject Name	Computer Aided Design – CAD 2
1.02	Semester	3
1.03	Level	2
1.04	SKS	3
1.05	Mandatory / Curriculum	D-02
1.06	Subject Code	CADD
1.07	Subject Code	FAC-D-CADD-117
1.08	Year	2017 (7)
1.09	Quality Control	Final Test, Quiz, see evaluation
1.10	Limitations	Min 12 and Max 32 students in one class
1.11	Combined with	AVE, AUE, MEE, MTE
1.12	Perquisite	Engineering Drawing – CAD 1
1.13	Responsible	Dipl. Ing.- Wahjoe Goeritno, MSi.
1.14	Revision	15-05-2017/WaG

2 Description of Subject

This course is intended to equip the student with capabilities to represent the drawing using CAD software where it is used by many manufacturing Industries.

The CAD subject is the continuation of the technical drawing where they had already in previous semester. They will be approached with how to make a 3D solid modelling and represent it in 2D drawing.

The 3D solid modelling using method of parametric design and synchronous design with process of sketching, extrude, cut, revolved, hole making, chamfer and fillet, thin wall, sweep, lofted, add and subtraction, mirroring, array etc.

3 Objectives

- To introduce the application of CAD software in manufacturing process
- To understand the difference of CAD drawing and Manual drawing
- To be familiar using CAD software for working purpose
- To train engineering drawing using CAD software

4 Competency

After having the course:

- Students will understand the role of CAD in mechanical component and system design by creating geometric models and engineering drawings.
- Students will understand the basic mathematics fundamental to CAD software
- Students will able to draw a product in 2D and 3D
- Student will able to make 3 D modeling using parametric and synchronous method.
- Students will able to draw assembly drawing
- Students will work in teams to design a mechanical system

5 Learning Approach / Methodology

- Lectures/ Class contact (time-tabled) supplemented with interactive questions and answers;
- Circuit simulation using Electronic Workbench Software;
- Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing;
- 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 Points
5.5	Daily Quiz	20 Points
5.6	Final Examination	60 Points
	Total	100 Points

7 Text Book and Reference

1	<p>Main Text Book: Solid Edge Manual Book</p> <p>Software: CAD Solid Edge ST9</p>
2	<p>Supplement Textbooks: CAD/CAM Principle and Application PN Rao, Mc. Graw Hill, ISBN 13: 9780070681934.</p>

8 Content / Topics of Lecture

Week	Content/ Topics of Lecturing	Text Book	Remark
1	<p>Introduction to CAD: CAD in manufacturing process, CAD 3D modelling and 2D drawing. Process of manufacturing a product using CAD software. What is CAD – CAM – CAE and their relation</p>		Slide presentation, Video film from: Solid Edge, Solid Work, Sharp3D
2	<p>Sketching: Line, Arc, Circle, Rectangular, Polygon, Curve, Tangent, Mirror, Move, Offset, Trim, Fillet, Chamfer</p>	Solid Edge Manual Book	Slide presentation, Group discussion
3	<p>Sketching: Connect, Parallel, Coaxial, Horizontal, Vertical, Perpendicular, Symmetric, Collinear</p>	Solid Edge Manual Book	Slide presentation, Group discussion Quiz1
4	<p>Solid Modelling: Extrude, Cut, Revolved cut, Hole making, Fillet, Chamfer</p>	Solid Edge Manual Book	Slide presentation, Group discussion
5	<p>Solid Modelling: Draft, Thin wall, Sweep, Lofted, Helix, Add and Subtraction of body.</p>	Solid Edge Manual Book	Slide presentation, Group discussion
6	<p>Engineering Drawing: Transfer from 3D to 2D drawing. Drawing template Views and projection: 1st angle and 3rd angle projection. Special views, Isometric views.</p>	Solid Edge Manual Book	Slide presentation, Group discussion Quiz2
7	<p>Engineering Drawing: Section, Detailing, Dimensioning</p>	Solid Edge Manual Book	Slide presentation, Group discussion
8	MIDTERM SEMESTER BREAK		

9	Assembly Drawing: Aligning, moving, point, part numbering. Bill of Material.	Solid Edge Manual Book	Practical using the drawing already made
10	Assembly Drawing: Explode drawing, part numbering,	Solid Edge Manual Book	Practical using the drawing already made Quiz 3
11	Parametric to Synchronous: Sketch in Synchronous method. Select Planes, Develop free sketch.	Solid Edge Manual Book	Slide presentation, Group discussion
12	Parametric to Synchronous: 3D Modelling in Synchronous method. Develop 3D solid from sketch. The function of Steering wheel	Solid Edge Manual Book	Slide presentation, Group discussion
13	Parametric to Synchronous: 3D to 2D drawing, views, section, Auxiliary views, Assembly drawing	Solid Edge Manual Book	Practical using the 3D model already made
14	Material Selection: Select the material for the part model, Inspect the technical data of the part model, and change the material.	Solid Edge Manual Book	Practical using the 3D model already made Quiz 4
15	Sheet Metal Drawing: The thickness of sheet metal, radius, Bending $<90^\circ$, 90° , $>90^\circ$. Development, Dimensioning.	Solid Edge Manual Book	Slide presentation, Group discussion
16	Final Examination		