AEN 2106Computer Aided Design and Drafting
Course Code:
Course Level: Level 2
Course Credit: 4 CU
Instructor: Mr. Thomas Makumbi, BSc. Agric. Eng (Mak)
Teaching Assistant

Brief Course Description

This course is mainly a computer applications course. It builds on the concepts learnt by the student from the Engineering Drawing course offered at Level 1. It involves a lot of hands-on by the students using a standard Computer Aided Design (CAD) and modeling software package.

Course Objective

The objectives of this course are to:

- To introduce students to solid modeling using CAD software.
- To equip students with the basic principles required in generating mechanical components and assemblies.

Course content

Lecture	Topic	Content	Methods	Tools/ equipment
1.	Introduction to the solid modeling environment	Examples on solid modeling in part environment, review of engineering drawing principles using CAD	Interactive lecture (2 hrs)	Laptop, LCD
2.	Swept protrusion and swept cut out	Examples on solid modeling having features drawn by swept protrusion	Interactive lecture (2 hrs)	Laptop, LCD
3.	Revolved protrusion and revolved cut out	Examples on solid modeling having features drawn by revolved protrusion	Lecture (2 hrs)	Laptop, LCD
4.	Tutorial 1		Practical (3 hrs)	Laptop, LCD and computer laboratory with Solid Edge
	Lofted protrusion and lofted cut out	Examples on solid modeling having features drawn by revolved protrusion	Lecture (2 hrs)	Laptop, LCD
5	Tutorial 2		Practical (3 hrs)	Laptop, LCD and computer laboratory with Solid Edge
	Patterns and thin wall command	Examples on generating repetitive features	Lecture (2 hrs)	Laptop, LCD

		using pattern commands (rectangular pattern, circular pattern and pattern along curve)		
6	Helical protrusion and helical cut out	Examples on solid modeling having features drawn by helical protrusion	Lecture (2 hrs)	Laptop, LCD
7	Tutorial 3		Practical (3hrs)	Laptop, LCD and computer laboratory with Solid Edge
	Curve by Table and Swept protrusion	Examples on solid modeling having features drawn by helical protrusion	Lecture (2 hrs)	Laptop, LCD
8	Tutorial 4	Hands on students' activities in computer laboratory	Practical (3hrs)	Laptop, LCD and computer laboratory with Solid Edge
9	Boolean feature commands		Lecture (2 hrs)	Laptop, LCD
10	Tutorial 5	Hands on students' activities in computer laboratory	Practical (3 hrs)	Laptop, LCD and computer laboratory with Solid Edge
11	Test 1	Using solid edge part environment to generate machine parts	Hands on (3 hrs)	computer laboratory with Solid Edge
12	Assembly	Using solid edge draft environment to assemble various machine parts	Lecture (2 hrs)	Laptop, LCD
13	Tutorial 6	Hands on students' activities in computer laboratory	Practical (3 hrs)	Laptop, LCD and computer laboratory with Solid Edge
14	Sheet metal	Using sheet metal environment to draw machine parts	Lecture (2 hrs)	Laptop, LCD
15	Tutorial 7	Hands on students' activities in computer laboratory	Practical (3 hrs)	Laptop, LCD and computer laboratory with Solid Edge
16	Production	Generation of	Lecture (2 hrs)	Laptop, LCD

	drawings	orthographic projections for assembly drawings		
17	Tutorial 8	Hands on students' activities in computer laboratory	Practical (3 hrs)	Laptop, LCD and computer laboratory with Solid Edge
18	Test 2	Machine drawing using solid edge	Hands on (3hrs)	computer laboratory with Solid Edge

Assessment:

- Assignments (10%)
- Projects (10%)
- Tests (20%)
- Final university examination (60%)

References

- Jensen C and Helsel J.D (1998). "Engineering Drawing and Design". Fifth Edition. Mc Graw - Hill, Inc.
- Hart K.R (1975). "Engineering Drawing with Problems and Solutions". Edward Arnold, London, UK.
- Parker M.A and Pickup F (1990). "Engineering Drawing with Worked Examples (1 and 2)". Third edition. Century Hutchinson limited, Melbourne, Australia.
- Sidheswar N., Kannaiah P. and Sastry V.V.S (1980). "Machine Drawing". Tata Mc Graw-Hill Publishing Company Limited.
- Morgan J.O, Horner J.E and Biney P.O (2003). "Design Modeling Using Solid Edge for Engineers and Designers. Kendall/ Hunt Publishing Company.

Other Resources

- Computer laboratory connected to internet
- University library
- Faculty and department book banks
- Solid Edge and unigraphics laboratory
- Mechanical workshop