Tsuyama College	Year	2020		Course Title	Introduction to CAD

Course Information

Course Code	0034		Course Category	Specialized / Compulsory
Class Format	Practical training		Credits	School Credit: 2
Department	Department of Integrated Science and Technology Communication and Informations System Program		Student Grade	2nd
Term	Year-round		Classes per Week	2
Textbook and/or Teaching Materials	Textbooks : "ADRISE edited, Yokuwakaru 3 dimensional CAD system SOLIDWORKS Nyumon"(Nikkan Kogyo Shimbun, Ltd.)			
Instructor	YAMAGUCHI Daizo,KATO Manabu,CHO Feifei			

Course Objectives

Learning purposes :
The culture for engineering drawing is an essential especially in manufacturing premise. Three dimensional CAD system is a standard tool. Entry-level operating method could be mastered.

Course Objectives :
1. To be able to explain the function of each unit and structure of CAD system.
2. To be able to understand and operate CAD system.
3. To be able to understand the functions and rules for engineering drawing.

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	To be able to explain the function of each unit and structure of CAD system.	To be able to explain the function of each unit of CAD system.	To be able to explain the general outline of CAD system.	Has not reached the Acceptable level.
Achievement 2	To be able to operate CAD system.	To be able to understand basic function of each unit CAD system.	To be able to explain CAD system with textbook.	Has not reached the Acceptable level.
Achievement 3	To be able to understand the functions and rules for engineering drawing.	To be able to understand the functions for engineering drawing.	To be able to understand third angle projection method.	Has not reached the Acceptable level.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : Specialized Field of learning : Common to all courses of engineering, Materials, Design and Production, Computer Control, Electrical and Electronic Contorol Required, Elective, etc. : Must complete subjects Foundational academic disciplines : Engineering／Mechanical engineering／Design engineering, Machine functional element, tribology Relationship with Educational Objectives : This class is equivalent to (3) Acquire deep foundation knowledge of the major subject area Relationship with JABEE programs : The main goals of learning / education in this class is (A) also (D)is involved. Course outline : Students will learn the basic operation of CAD, which is widely used as a tool for mechanical and electrical/electronic drawing. "SolidWorks" is used as the CAD software for mechanical drawing.
Style	Course method : The class is taught in a seminar room at the Central Information Center, using a board and slides, mainly exercises to understand the CAD system, and basic operations to make simple drawings. Grade evaluation method : Evaluation of the level of completion of the drawings (60%) and attitude towards the work (40%); however, if one of the drawings is not completed, no grade will be given.
Notice	Precautions on the enrollment : Students must take this class (no more than one-third of the required number of class hours missed) in order to complete the 2nd year course. Course advice : Perform CAD operations as a basis for mechanical and electrical/electronic drawing. It is necessary to be familiar with basic PC operations on a regular basis. Foundational subjects : Integrated science and technology basis (1st year) Related subjects : Electrical and electronic circuits（2nd year） Attendance advice : Students must not be late or miss a class. It is important to have a good attitude in order to learn basic operations. Students are expected to submit drawings on time.

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	To understand the overall flow of the class. To understand the precautions.
		2nd	What is 3D computer graphics?	Understanding 3-D computer graphics.

		3rd	Basics of 3D computer graphics.	Describe 3-D computer graphics.
		4th	Basic drawing [How to draw basic shapes]	Understand the technical terms and rules in drawing.
		5th	Basics of Shape Grasping and Three Plane Drawing [Third angle projection method].	Third angle projection method can be explained.
		6th	Exercise for geometry recognition 1	Be able to draw a projection view from a three-dimensional figure.
		7th	Exercise for geometry recognition 2	Be able to point out mistakes in the projection view.
		8th	Exercise for geometry recognition 3	Be able to complete a three-view drawing by filling in unfinished geometries.
	2nd Quarter	9th	Exercise for geometry recognition 4	Be able to draw a three-dimensional figure from a projection view.
		10th	Exercise for geometry recognition 5	Be able to draw an isometric view from a projection view.
		11th	Types and Properties of CAD	Be able to explain the types and properties of CAD (textbook pages 7-14, same as below).
		12th	Basic CAD operations 1 (starting, saving and closing CAD software)	Be able to start, save and exit the software (15-30).
		13th	Basic CAD operations 2 (sketching and dimensioning)	Be able to perform sketching and dimensioning operations (31-39).
		14th	Basic CAD Operation 3 (Feature)	Be able to perform Feature operations (40-47).
		15th	Basic CAD Operations 4 (Fillet)	Be able to perform Fillet operations (48-59).
		16th		
2nd Semester	3rd Quarter	1st	Basic CAD operations 5 (Assembly).	Be able to perform Assemble operations (60-73).
		2nd	CAD exercises for simple machine elements1	Drawing up a part (31-39). Be able to draw a new part. Understand and use the basic functions of a CAD system.
		3rd	CAD exercises for simple machine elements 2	Drawing up a part (40-59). Be able to extrude in sketches operation, operate a model display and add hollowed-out shapes. Understand and use the basic functions of a CAD system.
		4th	CAD exercises for simple machine elements 3	Drawing up a part (60-73). Be able to perform copying geometry, rounding corners and defining a complete in sketches. Understand and use the basic functions of a CAD system.
		5th	CAD exercises for simple machine elements 4	Drawing up a part (74-86). Be able to modify models and rotate in sketches to drawing models. Understand and use the basic functions of a CAD system.
		6th	CAD exercises for simple machine elements 5	Be able to check the drawings of the parts. Understand and use the basic functions of a CAD system.
		7th	Modeling 1	Be able to operate the assembly process of the parts (87-104). Understand and use the basic functions of a CAD system.
		8th	Modeling 2	Be able to change 3D to 2D drawings (105-119). Understand and use the basic functions of a CAD system.
	4th Quarter	9th	Modeling 3	Be able to draw a 2D drawing of the parts (120-130). Understand and use the basic functions of a CAD system.
		10th	Modeling 4	Be able to check and complete the 2D drawings. Understand and use the basic functions of a CAD system.
		11th	Electrical and electronic drafting basics	Understand the basics of electrical drafting.
		12th	CAD exercises for simple electric circuits1	Be able to understand the content of the exercises.
		13th	CAD exercises for simple electric circuits 2	Complete the exercise.
		14th	Drawing an electrical circuit diagram1	Be able to understand the content of the exercises.
		15th	Drawing an electrical circuit diagram 2	Complete the assignment.
		16th		

Evaluation Method and Weight (%)

	Reports	Attitude	Total
Subtotal	60	40	100
Basic Proficiency	0	0	0
Specialized Proficiency	60	40	100
Cross Area Proficiency	0	0	0