

CASPER COLLEGE COURSE SYLLABUS
Course Number and Title: ENTK 2510-01 CAD 3D Modeling

Semester/Year: Fall 2015

Lecture Hours: 2

Lab Hours:4

Credit Hours: 4

Class Time: 1:00 – 3:50

Days: Monday and Wednesday

Room: GW 107

Instructor's Name: Paul Brutsman

**Instructor's Contact
Information:**

Office Phone:
(307) 268-2529 w/voice mail

Email:
pbrutsman@caspercollege.edu

Office Hours: Monday and Wednesday 12:00 p.m. - 1:00 p.m. and 5:30 p.m. – 6:00 p.m.
Tuesday 12:00 p.m. 12:30 p.m. and 3:15 p.m. -3:30 p.m.
Thursday 12:00 p.m. – 12:30 p.m. and 3:15 p.m. -4:00 p.m.

Course Description: An introductory course in 3D solid modeling. The student will learn basic part and assembly modeling techniques with an emphasis on design intent. Standard 3 view part prints including section, detail and exploded views will be created.

Statement of Prerequisites: ENTK 1510 or instructor's permission

Institutional Outcomes:

- Demonstrate effective oral and written communication
- Use the scientific method
- Solve problems using critical thinking and creativity
- Demonstrate knowledge of diverse cultures and historical perspectives
- Appreciate aesthetic and creative activities
- Use appropriate technology and information to conduct research
- Describe the value of personal, civic, and social responsibilities
- Use quantitative analytical skills to evaluate and process numerical data

Program Goals: The goal of the Drafting & Design department is for students to obtain an education and practical skill development that promotes lifelong learning and insures student success in a career in Drafting & Design or an allied field within Engineering Technology.

Course Goals: To educate the student in basic solid modeling techniques using SolidWorks. The student will create parts in part mode and in the context of an assembly. Toolbox, Hole Wizard and other design tools in SolidWorks will be used to increase design accuracy and productivity.

Course Objectives: Use of 3D solid modeling software in the design process

Methodology: Practical application of theoretical concepts is emphasized in the classroom and lab. Concepts discussed in lecture will be demonstrated and then applied by the students.

Evaluation Criteria:

Homework and Quizzes	50%	A= 90-100%
Tests	30%	B= 89-80%
Final Project	10%	C= 70-79%
Portfolio	10%	D= 60-69%
		F= <59%

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

Required Text, Readings, and Materials: SolidWorks 2014 for Designers, Sham Tickoo
Engineering Drawing and Design, David A. Madsen

References: SolidWorks.com, YouTube and other web sites.

Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade:

- Refer to Casper College Catalog.
- During lecture please do not work on class assignments. It is important that you pay attention and take notes of the lecture. The assignments will require material covered in the lecture.
- Late assignments will not receive full credit. A letter grade will be deducted for each day the assignment is late. After two class periods the assignment will not be accepted.
- Cell phone use in the classroom is reserved for emergency purposes only. Please set all phones to vibrate and excuse yourself from the classroom if use is necessary.
- No ipod or other electronic devices will used during lecture.
- Computers are to be used for classroom work only. No games, Facebook, myspace etc.
- Attendance is very important. Students missing 5 classes will be given the choice of taking an "F" for the class, withdrawing from class or changing to an audit **and** continue to participate.
- Required Supplies: Pen/pencil, USB storage drive, notebook.
- Students will be required to complete a final project by the last week of class. The project will be presented to the class at the end of the semester.
- Portfolio: PowerPoint to include images of assignments completed during the semester with brief explanation of problem solving, design intent, strategies of graphic communication and techniques used to complete the assignment. The student will receive a grade on this portfolio as described in evaluation criteria.
- Please wipe down the desk and keyboard before or after class.

Final Project

- This is a project that is chosen by the student and approved by the instructor. This project should be something of interest to the student. **You should be working on the project the entire semester.** Tools in the design studio are available for manufacturing of the final project if applicable. Students are encouraged to use the 3D printer, laser engraver, CNC plasma cutter and/or tubing bender to manufacturer their final project. Some projects are beyond our abilities to manufacturer and that is okay. You will present this project at the end of the semester to the class. PowerPoint is the preferred software for this presentation.

Portfolio

- This is an electronic summary of the class assignments. This is something you could show to a potential employer who is interested in knowing what types of projects you did in class. PowerPoint is the preferred software for this portfolio.

Robotics Fabrication Lab Safety Rules

- You are required to get instructors permission before any use of the shop and equipment
- Safety glasses must be worn in the Robotics Fabrication Lab shop at all times. There are dispensers located at the entrance door. Be sure to return glasses after use.
- Safety shield must be worn when grinding. No exceptions.
- If you are welding, safety curtains must be positioned properly
- All general shop safety rules must be followed. If you are unsure, please ask the instructor for guidance

Design Studio Safety Rules

- You are required to get instructors permission before any use of the shop and equipment
- Safety glasses must be worn in the Design Studio if any equipment is running. Be sure to return glasses after use
- All general shop safety rules must be followed. If you are unsure, please ask the instructor for guidance

Student Rights and Responsibilities: Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

Chain of Command: If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

Academic Dishonesty: (Cheating & Plagiarism) Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

Official Means of Communication: Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

ADA Accommodations Policy: If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, bheuer@caspercollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

Course Outline

Week 1

File management

Create a working directory for class projects

My Documents\YOUR NAME\ENTK 2510\PAUL'S TEMPLATES

My Documents\YOUR NAME\ENTK 2510\HOMEWORK

My Documents\YOUR NAME\ENTK 2510\FINAL PROJECT

My Documents\YOUR NAME\ENTK 2510\PORTFOLIO

- Chapter 1
- SW file search protocol
 - Introduction to SolidWorks
 - Navigate the SolidWorks User Interface (UI)
 - Menu Bar
 - Drop Down Menus
 - Right Click Menus
 - Flyout/consolidated toolbar buttons
 - Confirmation corner
 - Heads-up view toolbar
 - Command Manager
 - Feature manager design tree
 - Task Pane
 - View Palette

Create inch/ANSI part template

Create mm/ISO part template

Create basic extrude and cut features on a block

Homework Chapter 1 Self evaluation test

Week 2

- Chapter 2
- Drawing Sketches for Solid Models
 - Sketch Relations

Homework Chapter 2 Review Questions.
Chapter 2 Tutorial 1, 2, 3 and 4. Position origin as shown by instructor
Work on Final Project/Portfolio

Week 3

- Chapter 3
- Editing and Modifying Sketches
- Homework
- Chapter 3 Review Questions
 - Chapter 3 Exercises 1, 2, 3, 4
 - Work on Final Project/Portfolio

Week 4

Chapter 4 Adding Relations and Dimensions to Sketches
Class demonstration – Everything you wanted to know about sketch relations

Homework Chapter 4 review questions
Chapter 4 Tutorial 1 and 2. Tutorial 3 extra credit (see page 5-30 for extrusion directions and length for tutorial 3)
Chapter 4 Exercise 2 and 3
Work on Final Project/Portfolio

Week 5

Chapter 5 Advanced Dimensioning Techniques and Base Feature Options

Homework Chapter 5 – Tutorial 2 and 3.
Chapter 5 – Exercise 1 and 2
Work on Final Project/Portfolio

Week 6

Solid Model of Fasteners

Class demonstration of revolve and sweep
Review Machinery Handbook tables

Homework Solid Model of Fasteners handout provided by instructor
Work on Final Project/Portfolio

Week 7

Chapter 6 Creating Reference Geometries

Homework Chapter 6 Tutorial 1
Chapter 6 Exercises 1
Work on Final Project/Portfolio

Week 8

Work on Final Project/Portfolio

Test #1

Work on Final Project/Portfolio

Week 9, 10 and 11

Chapter 7 Advanced Modeling Tools
 Hole wizard
 Shell
 Fillet

Modeling Assemblies

Clamp assembly provided by instructor

Create Drawing Templates

A_ANSI_INCH
B_ANSI_INCH
A_ISO_METRIC

Creating Assembly Drawings

Exploded views with Balloons and BOM

Creating Drawings

Threaded rod
Base

Homework

Chapter 7 – Review Questions
Exploded view with Balloons and BOM of clamp assembly
Drawings of threaded rod and base
Work on Final Project/Portfolio

Week 12

Chapter 8 Advanced Modeling Tools – II
 Chapter 8 Exercise 3
 Work on Final Project/Portfolio

Week 13

Work on portfolios and final projects

Week 14

Chapter 9 and 10– Editing Features – Advanced Modeling Tools III
Homework Chapter 10 Tutorial 1 and 2. Tutorial 3 extra credit (good luck)
 Work on Final Project/Portfolio

Week 15

Chapter 12 – Assembly Modeling I
Homework Tool Holder Assignment
 Work on Final Project/Portfolio

SCHEDULE IS SUBJECT TO CHANGE