

MECHANICAL ENGINEERING DEPARTMENT
ME 380-Section—Advanced SolidWorks
(3.0 credit hours)
Fall 2017

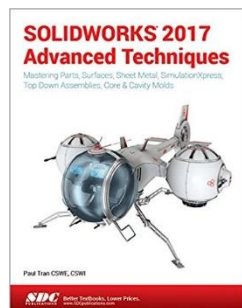
**Catalog
Description**

ME 380-00#—Advanced SolidWorks (3 credits). Fundamentals of graphical communications, including sketching, computer-aided drafting, design, and parametric modeling.

Prerequisites

MAT 136 (Calculus), CS 122 (Computer Science) and ME 180 (Engineering Graphics) with grades greater than or equal to “C”.

**Readings and
Materials**



Textbook:

Paul Tran, SolidWorks 2017, CSWE, CSWI. ISBN: 978-1-630570-59-0

Instructor

First Last Rm 3, Phone # email: #
Office hours: Day# hour#, or by appointment

Meeting Times

Section # – Day# Hour# in Engineering (bldg. 69), room #.

Course Objective

The main objective of this course is to provide Mechanical Engineering students with an advanced techniques and ability in SolidWorks program. The student will be able to understanding the advance tutorial, sweep and loft, surfaces, sheet metal, weldment, mold tooling, top down assembly, motion study and GT&T.

**Course Student
Learning
Outcomes**

The main objective of this course is to provide Mechanical Engineering students with an advanced techniques and ability in SolidWorks program. The student will be able to understanding the advance tutorial, sweep and loft, surfaces, sheet metal, weldment, mold tooling, top down assembly, motion study and GT&T. Upon completion of this class, you will be able to:

1. Ability to identify, formulate, and solve engineering problems
2. Ability to design and conduct experiments, as well as to analyze and interpret data
3. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
4. Use the solid modeling capabilities of a computer-aided design (CAD) package to generate three-dimensional solid model.
5. Have a thorough understanding and be able to create engineering drawings
6. Sketch free-hand pictorials of three-dimensional objects.
7. Read engineering scales and take driving dimensions from manufactured parts.

* LO's refer to ME Learning Outcomes, as listed in a separate

<https://nau.edu/CEFNS/Engineering/Mechanical/Objectives-and-Outcomes/>

**Assessments of
Course Student**

Homework assignments and exams will be used to provide clear indications of your achievement of course learning outcomes. Homework assignments will provide learning situations that will develop

**Learning
Outcomes**

your understanding and knowledge of the course objectives. Exams will allow the instructor to assess your level of knowledge of the course objectives as well as serving as additional learning opportunities.

Grading

Your final grade will be based upon the monthly exams, homework problems, and final exam as follows:

RELATIVE WEIGHT		GRADE DISTRIBUTION	
Class Participation/Attendance	5%	A	90%+
Exam #1	10%	B	80 to 89%
Exam #2	10%	C	70 to 79%
Homework	25%	D	60 to 69%
Quizzes	15%	F	Below 60%
Final Exam	10%		
Project	20%		
Total	100%		

Homework:

Homework will be assigned on Blackboard, and is considered due before the relevant quiz or test for that chapter. There will be eleven homework for the course, seven of them will be in SolidWorks and three will be in 3D Sketch on paper.

Quizzes:

There will be seven in-class quizzes. Each quiz will consist of one or two problems, which are based on recently assigned homework and in-class assignments.

Exams:

It is typical that your examination work will be immaculate, clear, and all together. In case it is not, you may not get midway credit for your work. There will be three exams for this course and each exam is worth 10% of your grade. Each exam will consist of problems designed to comprehensively test your knowledge of the material.

Project:

Students will create a 3D assembly consisting of several 3D parts. On the last day of the semester, students are required to present the project to the instructor and save the project in its entirety to the school directory for inspection. The project will be integrated into course work over the semester and based on the theme that the instructor assigned. It is expected that each student completes his or her own work, otherwise grade reduction will result.

Drop/add dates

The last day to add a class without a petition and a \$25 late add fee is Thursday, September 8th; however, note that in Mechanical Engineering instructor consent is required after the fourth day of classes. The last day to drop a course without a “W” on transcript is also Thursday, September 8th. You can find additional information about drop/add deadlines at the following link for the Office of the Registrar’s Academic Deadline Calendar:

<http://nau.edu/Registrar/Important-Dates/Fall-2016/>

**ME 380-00#—Advanced SolidWorks
Fall 2017 Tentative Schedule**

Week	Topic	Chapter Reading	Assigned	Due date
1	Introduction to 3D sketch	Ch 1	HW1-Modeling 3D	
2	Advanced Modeling	Ch 3	HW2-SD 1 Quiz 1	Due HW 1
3	Sweep with composite curves	Ch 4	HW3-SD 2	Due HW 2
4	Advanced Modeling with sweep & loft	Ch 5	HW4-SD 3 Quiz 2	Due HW 3
5	Exam 1	Ch 1,3,4,5		DUE HW 4
6	Loft with guide curves	Ch 7	Project 1, HW 5- Modeling 3D	
7	Using Surfaces-Advanced modeling	Ch 8	HW 6-SD4 Quiz 3	Due HW 5
8	Advanced surface-offset surface & RULED SURFACE	Ch 9	HW 7-SD 5	Due HW 6
9	Surfaces vs Solid Modeling	Ch 11	HW 8-SD 6 Quiz 4	Due HW 7
10	Sheet metal parts	Ch 13	Quiz 5	Due project 1
11	Exam 2	Ch 7,8,9,11	Project 2	Due HW 8
12	Start on Project 2 outside class / Thanksgiving break			
13	Sheet metal conversions	Ch 15	HW 9- modeling 3D Quiz 6	
14	Creating a core and cavity-Linear parting lines	Ch 17	HW 10-SD 7 Quiz 7	Due HW 9
15	Top-Down assembly	Ch 19	HW 11- SD 8	Due HW 10
16	<i>FINAL EXAM - DECEMBER # - Day - Time</i>			Due HW 11, Project 2

CLASS POLICIES

Attendance

As stated in the Class Attendance policy in the [NAU General Catalog](#), students are expected to assume the responsibility for regular class attendance. When absence is unavoidable, students should report the reason to the instructor and assume the responsibility for any work they miss. Instructors are under no obligation to make special arrangements for students who have been absent unless the student has an institutional excuse. **Class attendance will be taken each day and will be a part of your grade.**

Extenuating Circumstances

Exceptions to the late homework, attendance, class activity, and examination policies may be made only under certain extenuating circumstances such as a serious illness or an institutional excuse, and will require valid written verification. ***In order to be valid, a medical excuse must state that you are unable to attend classes due to the severity of the illness or the risk of spreading it and should clearly state the dates that you should be absent from the university. Furthermore, a written medical note that simply states that you visited a clinic or were seen by a doctor or nurse is not valid and will not be accepted.***

If you have an institutional excuse (not a medical excuse), it must be presented to the instructor in person or attached to an email at least 5 working days prior to the anticipated absence. For instance, if you will miss a Wednesday 9:10 am class during a normal week, you should present your institutional excuse no later than the previous Wednesday before 9:10 am.

Be aware that neither medical nor institutional excuses absolve you of making up any required work or exams. Remember also that you can **always** turn in an assignment **early**.

Academic Integrity

As defined by the [NAU Academic Integrity Policy](#), integrity entails a firm adherence to a set of values, and the values most essential to an academic community are grounded in honesty with respect to all intellectual efforts of oneself and others. In particular, keep in mind that exceptionally high standards of honor and integrity are fundamental and essential to the study and practice of engineering. See the [Professional Ethics and Code of Conduct](#) document for more information.

Academic Dishonesty

Academic dishonesty is a form of misconduct that is subject to disciplinary action under the Academic Integrity Policy. It will not be tolerated in this class and could result in failing the course or even expulsion from the college and university. If you are charged with academic dishonesty, you are subject to the procedures established by NAU that are outlined in the [NAU Academic Integrity Policy](#). Academic dishonesty includes cheating, collusion, fabrication/fraud, obtaining an unfair advantage and plagiarism. The possible consequences of academic dishonesty vary from a reduced or zero grade on the assignment or examination to a failing grade in the course. In extreme cases, suspension and/or dismissal from the university may be penalties, especially for students with past records of academic dishonesty. See the [NAU Academic Integrity Policy](#) for more information and additional examples. Keep in mind that engineering is considered to be an ethical profession, and engineering students are expected to display the highest ethical standards. Furthermore, not knowing that certain activities qualify as academic dishonesty is not a defense to a charge of academic dishonesty.

1. **Cheating:** is the intentional use of, or attempted use of, unauthorized materials, information, study aids, or previously prepared solutions in any academic exercise, exam, paper or other assignment. For example, a student who communicates with other students during an exam (either directly or through bits of paper, hand signals or electronic devices) or who uses materials that are not allowed in the exam. Another example is given by students who get up from their seats (to ask questions from the instructor or to go to the restroom) and cheat by glancing at other students' papers. Conversely, a student may get up but leaves his/her exam uncovered, allowing other students to easily see their work. In a particularly egregious example of cheating, consider a student who changes his/her answers on an examination after it has been graded in order to gain more credit than deserved. Yet another example is provided by a student who possesses, uses, and/or circulates the solutions manual to the problems in the textbook.
2. **Collusion:** occurs when two or more students work together to produce individually submitted work without the permission of the faculty member. Collusion also occurs when one student produces work and knowingly allows another student to copy it and submit that copy for assessment. In such a case, both students will be considered to have colluded. Similarly, any student who helps another student to commit any type of academic dishonesty is considered to have colluded. Note

- that in engineering assignments it is OK to work in groups in order to discuss the solution to a problem, but the actual calculations performed to obtain the solution should be individually done.
3. **Fabrication/Fraud:** is the unauthorized falsification or invention of any information, data, or citation in an academic exercise. It also includes any attempt to deceive a faculty member or administrative officer of the university regarding academic work. For example, a student who falsely uses illness or other form of extenuating circumstance to obtain an extension on an exam or assignment. As another example, consider a student whose final answer to a homework problem does not match the answer in the back of the book, but the student writes the answer in the book on his/her paper anyway. This is a fraudulent situation that can be easily detected, since it will be obvious that the calculations are inconsistent with the answer (and in some cases the answer in the book may be wrong). A similar situation occurs when a student presents a solution to a problem with insufficient calculations to justify the answer, and this answer magically matches the answer in the book or the answer obtained by other students in the class.
 4. **Obtaining an unfair advantage:** includes activities that directly or indirectly compromise fair assessment or grading or constrain other students' abilities to successfully complete their assignments. As examples, consider gaining access to examination materials prior to the time authorized by the faculty member, or destroying reference materials with the result that others are deprived of their use. Other examples include possessing, using, or circulating previously administered examinations, unless authorized by the faculty member.
 5. **Plagiarism:** representing the words, expressions, productions or creative works of another as one's own in any academic exercise. For example, consider a student who simply copies the solution to a problem from others or from a solutions manual or from the solution to a similar problem assigned in a previous semester. Another example is given by a student who submits a computer assignment that is simply a copy (or effectively a copy) of another student's work. An additional example is given by a student who either completely or partially copies a report or assignment from another student or even from the web.

NORTHERN ARIZONA UNIVERSITY

POLICY STATEMENTS FOR COURSE SYLLABI

SAFE WORKING AND LEARNING ENVIRONMENT POLICY

NAU's Safe Working and Learning Environment Policy (SWALE) prohibits discrimination and harassment, including sexual harassment, on the basis of sex, race, color, age, national origin, religion, sexual orientation, gender, gender identity, disability, or veteran status by anyone at this university. Retaliation of any kind as a result of making a complaint under the policy or participating in an investigation is also prohibited by SWALE. The Equity and Access Office (EAO) handles complaints of discrimination and harassment that fall under the SWALE policy and also assists with religious accommodations. You may obtain a copy of the SWALE policy from the college dean's office or from the EAO website nau.edu/diversity/. You may contact EAO for information or to file a complaint at Old Main, Room 113, PO Box 4083, Flagstaff, AZ 86011, by phone at 928-523-3312, TDD: 928-523-1006 and Fax: 928-523-9977, by email at equityandaccess@nau.edu or through the EAO website at nau.edu/diversity/.

TITLE IX

Title IX and NAU prohibit discrimination based on sex or gender in any education program or activity receiving federal financial assistance. Sex discrimination includes sexual harassment, sexual assault, relationship violence and stalking. The Title IX Coordinator is EAO Director, Pamela Heinonen. The Title IX Coordinator has overall responsibility for Title IX compliance, including training, education, and administration of grievance procedures. She may be reached at Pamela.Heinonen@nau.edu. Director, Equity and Access Office, Old Main, Room 113, PO Box 4083, Flagstaff, AZ 86011, Phone: 928-523-3312, Fax: 928-523-9977, TDD: 928-523-1006, by email at Pamela.Heinonen@nau.edu. Important information on Title IX, reporting requirements, complaint options and student resources is at <http://nau.edu/Equity-and-Access/Title-IX/>.

STUDENTS WITH DISABILITIES

If you have a documented disability, you can request accommodations by contacting Disability Resources (DR) at 523-8773 (voice) or 523-6906 (TTY), dr@nau.edu (e-mail) or 928-523-8747 (fax). Once eligibility has been determined, students are required to register with DR every semester to activate their accommodations. Although you may request an accommodation at any time, in order for DR to best meet your individual needs, you are urged to submit a self-identification form and necessary documentation (www.nau.edu/dr) at least 4 weeks prior to the time you wish to receive accommodations. DR is strongly committed to the needs of students with disabilities and the promotion of Universal Design. Concerns or questions related to the accessibility of programs and facilities at NAU may be brought to the attention of DR or the Equity and Access Office (523-3312 or equityandaccess@nau.edu). The university ADA/504 Coordinator is DR Director, Jamie Axelrod. He may be reached at Jamie.Axelrod@nau.edu.

ACADEMIC CONTACT HOUR POLICY

Based on the Arizona Board of Regents Academic Contact Hour Policy (ABOR Handbook, 2-224), for every unit of credit, a student should expect, on average, to do a minimum of three hours of work per week, including but not limited to class time, preparation, homework, studying.

ACADEMIC INTEGRITY

Integrity is expected of every member of the NAU community in all academic undertakings. Integrity entails a firm adherence to a set of values, and the values most essential to an academic community are grounded in honesty with respect to all intellectual efforts of oneself and others. Academic integrity is expected not only in formal coursework situations, but in all University relationships and interactions connected to the educational process, including the use of University resources. An NAU student's submission of work is an implicit declaration that the work is the student's own. All outside assistance should be acknowledged, and the student's academic contribution truthfully reported at all times. In addition, NAU students have a right to expect academic integrity from each of their peers.

Individual students and faculty members are responsible for identifying potential violations of the university's academic integrity policy. Instances of potential violations are adjudicated using the process found in the university [Academic Integrity Policy](#).

RESEARCH INTEGRITY

The Responsible Conduct of Research policy is intended to ensure that NAU personnel including NAU students engaged in research are adequately trained in the basic principles of ethics in research. Additionally, this policy assists NAU in meeting the RCR training and compliance requirements of the National Science Foundation (NSF)-The America COMPETES Act (Creating Opportunities to Meaningfully Promote Excellence in Technology, Education and Science); 42 U.S.C 18620-1, Section 7009, and the National Institutes of Health (NIH) policy on the instruction of the RCR (NOT-OD-10-019; "Update on the Requirement for Instruction in the Responsible Conduct of Research"). For more information on the policy and the training activities required for personnel and students conducting research, at NAU, visit: <http://nau.edu/Research/Compliance/Research-Integrity/>

SENSITIVE COURSE MATERIALS

University education aims to expand student understanding and awareness. Thus, it necessarily involves engagement with a wide range of information, ideas, and creative representations. In the course of college studies, students can expect to encounter—and critically appraise—materials that may differ from and perhaps challenge familiar understandings, ideas, and beliefs. Students are encouraged to discuss these matters with faculty.

CLASSROOM DISRUPTION POLICY

Membership in the academic community places a special obligation on all participants to preserve an atmosphere conducive to a safe and positive learning environment. Part of that obligation implies the responsibility of each member of the NAU community to maintain an environment in which the behavior of any individual is not disruptive. Instructors have the authority and the responsibility to manage their classes in accordance with University regulations. Instructors have the right and obligation to confront disruptive behavior thereby promoting and enforcing standards of behavior necessary for maintaining an atmosphere conducive to teaching and learning. Instructors are responsible for establishing, communicating, and enforcing reasonable expectations and rules of classroom behavior. These expectations are to be communicated to students in the syllabus and in class discussions and activities at the outset of the course. Each student is responsible for behaving in a manner that supports a positive learning environment and that does not interrupt nor disrupt the delivery of education by instructors or receipt of education by students, within or outside a class. The complete classroom disruption policy is in Appendices of [NAU's Student Handbook](#).

Effective Summer 2016

Approved UCC – 1/28/14

Approved UGC – 2/12/14