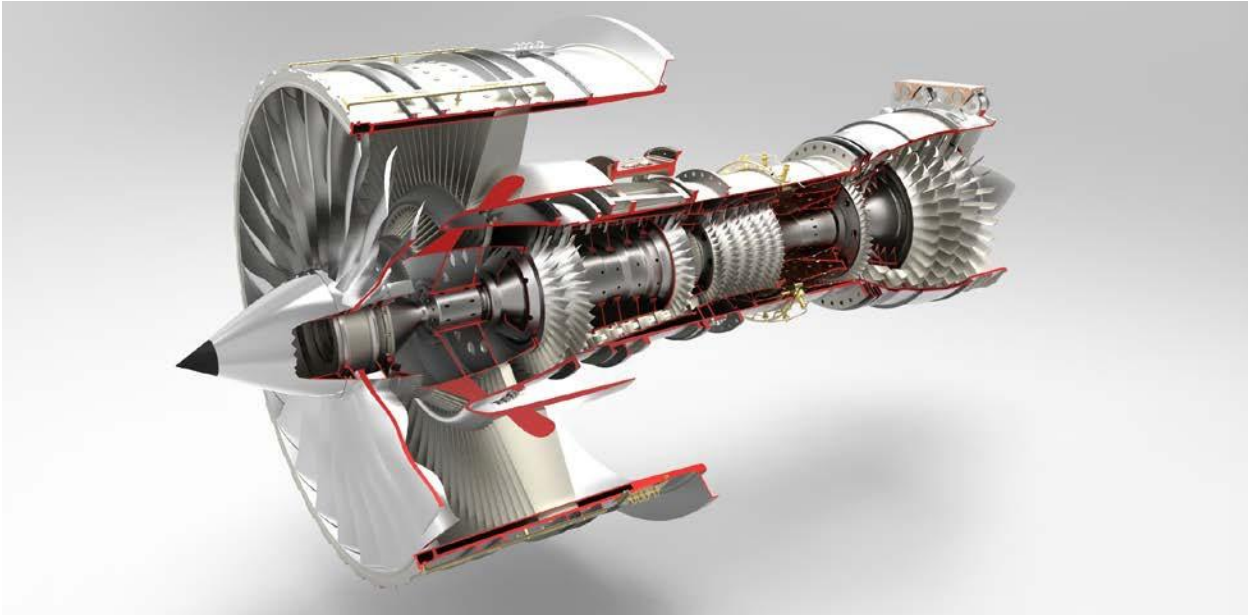


AE 20 – Computer-Aided Design for Aerospace Engineers

**Instructor Info:**

Professor Robert Benzio

Email: Robert.Benzio@sjsu.edu

Office Hours: After Lecture on Wednesday

Class Days / Time / Room

Lecture	W 16:30 – 17:20	Engr. 339
Lab Section 1	M 18:00 – 20:45	Engr. 407
Lab Section 2	W 18:00 – 20:45	Engr. 407

Prerequisites / Co-requisites:

None

Textbook:

ENGINEERING DRAWING&DESIGN-W/CD
 5th ed., CENGAGE Learning,
 David A. Madsen, David P. Madsen
 ISBN: 9781111309572

Description:

The course provides an introduction to the fundamentals of drafting and computer-aided design with applications in aircraft and spacecraft design. Students will team up with juniors and seniors to work on aerospace engineering design projects.

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Goals:

Introduce students to:

1. Technical freehand sketching.
2. Technical drawing.
3. 2D and 3D computer-aided design tools (CATIA, Inventor, or other CAD software available).

Learning Objectives:

Students completing the course will be able to:

1. Freehand sketch a 3D view of an object (isometric, oblique and perspective).
2. Draw the standard 2D views (top, front and profile) of an object.
3. Apply simple and complex constrained 2D sketches to create solid features.
4. Construct 3D solid models from sketch geometry using extrusions, revolutions, and sweeps.
5. Create part features such as holes, shells, fillets, chamfers, threads and drafts.
6. Construct and annotate layout drawings.
7. Build basic 3D assemblies with assembly constraints.
8. Layout 3D exploded assembly drawings with balloon labels and a bill of materials parts list.

Grading:	Homework + Labs	20%
	Project + Presentation	20%
	Midterm Exams	30%
	Final Exam	30%

100 – 97% A+

96 – 93% A

92 – 90% A-

89 – 85% B+

84 – 80% B

79 – 76% B-

75 – 72% C+

71 – 68% C

67 – 64% C-

63 – 61% D+

60 – 57% D

56 – 53% D-

< 53% F. All exams must be taken to receive a passing grade.

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Course Project:

- You will work in teams to provide CAD support, Autodesk Inventor preferably or one that the project is using (If not using Inventor then the project need to provide a little training on the software that they are using), to one of our senior design teams (aircraft or spacecraft depending on your interest and availability of senior projects). Details will be announced in the course of the semester.
- A list of projects provided by the faculty senior design coordinator are listed in Canvas.
- You are free to form your own teams, which must be announced on canvas in the “class project” assignment) by week 3 and late after week 4) check canvas for due dates.
- You will also be required to complete 4 progress reports. Details and due date will be listed in canvas. Due dates will be strongly enforced.
- You must follow the AIAA technical conference paper format when preparing your final project report.
- You must upload your final report to Canvas.
- You must email the final project in a zipped folder to the instructor at the week before your presentation for verification purposes.
- The deadline to submit final project reports is Tuesday 05/03/2016 (11:59 PM).

Approximate Weekly Schedule

Week	Topics
01	Introduction to CAD
02	Creating sketches
03	Creating parts
04	Creating parts continued
05	Creating features
06	Creating features continued
07	Cover basic drafting standards
08	Cover basic drafting standards continued
09	Create drawings
10	Create drawings continued
11	Creating assemblies
12	Creating assemblies continued
13	Creating exploded views
14	Advanced sketching, constraining and modeling techniques
15	Advanced sketching, constraining and modeling techniques
16	Final project due.

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Grading of CAD Files					
CATEGORY	For an F- 0	For a D- 1	For a C- 2	For a B- 3	For an A- 4
CAD models	Models missing or skipped entirely. No evidence of models in file.	Models poorly created.	Models adequately created but with some inaccuracies.	Models adequately created.	Models adequately created with work planes and sketches turned off. Also clean and named features in model tree with minimum features needed and includes; iProperties filed out.(i.e. name, material, part number).
CAD Drawings	No evidence of drawings or cannot open drawing file. No dimensioning	Drawings poorly created. No dimensioning	Drawings adequately created, with some dimensioning.	Drawings adequately created, with dimensioning.	Drawings adequately created, with correct dimensioning.
CAD Assemblies	No evidence of assembly or cannot open assembly file.	Assembly poorly created.	Assembly adequately created, but with some inaccuracies.	Assembly adequately created.	Assembly adequately created with all parts and assemblies constrained properly.
CAD Exploded view file (i.e. Inventor Presentation file)	No evidence of exploded view file or cannot open file.	Exploded view poorly created	Exploded view adequately created, but with some inaccuracies.	Exploded view adequately created.	Exploded view adequately created with grouping, order of tweaks, and good spacing for animation.

POLICIES

AE Program Policies

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the instructor's web page. You are responsible for regularly checking with the messaging system through MyJSU (or other communication system as indicated by the instructor) to learn of any updates.

Attendance

Attendance will not be taken during class but will be taken during lab. If you miss a class you are still responsible for any material discussed or assignments given. A large portion of each class will be used for problem solving in small groups. All students are expected to participate in class discussions and problem solving. Students who are often absent will find themselves at a disadvantage during the tests. If you miss a lab session, you will get zero score on this lab.

Teamwork

- You are required to work in teams for a number of assignments. Please make yourself available to meet and work with your teammates outside of class.
- Instructor will normally form all the teams.
- At the end of each project or team assignment, each team must submit along with their report each member's [peer evaluation](#) of the other members in a separate, sealed envelope. All peer evaluation forms must be included in the team report. If you disagree with the scores you receive from your peers, you may provide an explanation to your instructor in writing and request an individual exam on the assignment. To get full credit on a team assignment, your teammates must give you at least 85% in all areas of peer review (see [team member report card](#)). Otherwise, your score for this assignment will be your team's score multiplied by the average peer review score.
- If your name appears on a team paper, you are expected to be able to explain whatever answer / solution / derivation is on the paper. Failure to explain the team's answer by any individual is considered a violation of academic integrity (see University Policies below) and will result in a grade of zero for the team.

University Policies

Academic Success

Success in this course is based on the expectation that students will spend, for each unit of credit, **a minimum of** forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's [Catalog Policies](#) section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the current academic year calendars document on the [Academic Calendars webpage](#) at http://www.sjsu.edu/provost/services/academic_calendars/. The [Late Drop Policy](#) is available at <http://www.sjsu.edu/aars/policies/latedrops/policy/>. Students should be aware of the current deadlines and penalties for dropping classes. Information about the latest changes and news is available at the [Advising Hub](#) at <http://www.sjsu.edu/advising/>.

Consent for Recording of Class and Public Sharing of Instructor Material

[University Policy S12-7](#), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course.

- Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”
- In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.
- Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without written instructor consent.

Academic integrity

- Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy S07-2](#) at <http://www.sjsu.edu/senate/docs/S07-2.pdf> requires you to be honest in all your academic course work.
- Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development.
- The [Student Conduct and Ethical Development website](#) is available at <http://www.sjsu.edu/studentconduct/>.
- Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. Assignments are to be completed by the individual student unless otherwise specified. If your name appears on a team paper, you are expected to be able to explain whatever answer / solution / derivation is on the paper. Failure to explain the team's answer by any individual will result in a grade of zero for the team.

- If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Integrity Policy S07-2 requires approval of instructors.
- For help with paraphrasing and referencing please see the [SJSU Library Tutorial on Plagiarism](#). The following websites also show you how to paraphrase properly and avoid plagiarism:
<http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml> <http://owl.english.purdue.edu/handouts/research/index.html>

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the [Accessible Education Center](#) (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

Student Technology Resources

Computer labs for student use are available in the [Academic Success Center](#) at <http://www.sjsu.edu/at/asc/> located on the 1st floor of Clark Hall and in the Associated Students Lab on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library. A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include DV and HD digital camcorders; digital still cameras; video, slide and overhead projectors; DVD, CD, and audiotape players; sound systems, wireless microphones, projection screens and monitors.

SJSU Peer Connections

Peer Connections, a campus-wide resource for mentoring and tutoring, strives to inspire students to develop their potential as independent learners while they learn to successfully navigate through their university experience. You are encouraged to take advantage of their services which include course-content based tutoring, enhanced study and time management skills, more effective critical thinking strategies, decision making and problem-solving abilities, and campus resource referrals. In addition to offering small group, individual, and drop -in tutoring for a number of undergraduate courses, consultation with mentors is available on a drop-in or by appointment basis. Workshops are offered on a wide variety of topics including preparing for the Writing Skills Test (WST), improving your learning and memory, alleviating procrastination, surviving your first semester at SJSU, and other related topics. A computer lab and study space are also available for student use in Room 600 of Student Services Center (SSC). Peer Connections is located in three locations: SSC, Room 600 (10th Street Garage on the corner of 10th and San Fernando Street), at the 1st floor entrance of Clark Hall, and in the Living Learning Center (LLC) in Campus Village Housing Building B. Visit [Peer Connections website](#) at <http://peerconnections.sjsu.edu> for more information.

SJSU Writing Center

The SJSU Writing Center is located in Clark Hall, Suite 126. All Writing Specialists have gone through a rigorous hiring process, and they are well trained to assist all students at all levels within all disciplines to become better writers. In addition to one-on-one tutoring services, the Writing Center also offers workshops every semester on a variety of writing topics. To make an appointment or to refer to the numerous online resources offered through the Writing Center, visit the [Writing Center website](http://www.sjsu.edu/writingcenter) at <http://www.sjsu.edu/writingcenter>. For additional resources and updated information, follow the Writing Center on Twitter and become a fan of the SJSU Writing Center on Facebook. (Note: You need to have a QR Reader to scan this code.)

SJSU Counseling Services

The SJSU Counseling Services is located on the corner of 7th Street and San Fernando Street, in Room 201, Administration Building. Professional psychologists, social workers, and counselors are available to provide consultations on issues of student mental health, campus climate or psychological and academic issues on an individual, couple, or group basis. To schedule an appointment or learn more information, visit [Counseling Services website](#)