

San José State University
Mechanical Engineering Department

ME 165
(3-units)

Computer-Aided Design in Mechanical Engineering
Section 80 (50086)

Fall 2019

Course and Contact Information

Instructor: Dr. Susan M. Bowley
Office Location: E 348
Telephone: (202) 538-4432 (Mobile/Cell)
Email: susan.bowley@sjsu.edu
Office Hours: Online via Chat on Canvas Sundays 12-1pm;
Anytime via email (preferred);
By Appointment

Class Days/Time: **Online and Three (3) Required On-Campus Meetings:
Section 80: Mondays 1:30-4:15pm, E213 & E215**

Classroom (Canvas): Section 80: <https://sjsu.instructure.com/courses/1327598>

Prerequisites*: ME 020, CE 112, ME 130 or MATH 129A

*** You must turn in an unofficial transcript with the prerequisites highlighted by the due date noted in Canvas, or you will be dropped from the class.**

Course Format – Technology Intensive, Hybrid, and Online Courses

This is an online class with selected on-campus class meetings. You must have reliable Internet connectivity, a Windows-based computer (running Windows 7 or later), a downloaded copy of SolidWorks 2019 (key provided via Canvas), and all required textbooks (print or eBook) in order to participate and successfully pass this course. All course materials developed by your instructor are the intellectual property of the instructor and is to be used for private, study purposes only, and cannot be shared publicly or uploaded without the instructor's approval. All exams are given on-campus only. Two (2) required on-campus exams for SolidWorks Certifications are scheduled and your instructor will be present (see the Tentative Course Schedule at the end).

Canvas Course Website

All materials for this course will be available inside the Canvas course website noted above. These materials will include: Syllabus, Assignments, Handouts, Videos, and Course Notes. **You**

are responsible for regularly checking for due dates of Assignments and Course Materials through the Canvas course website.

Course Description

Theory and application of CAD. 2-dimensional and 3-dimensional modeling, commercial CAD software. Application to finite element analysis.

Prerequisite: ME 020, CE 112, and either ME 130 or MATH 129A, with a grade of C- or better in each. Allowed Declared Majors: Aerospace Engineering, Mechanical Engineering

Course Goals and Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. Describe the role of computer-aided design in practice of mechanical engineering, as well as the basic requirements of software and hardware for computer-aided design.
2. Exercise proficiency in creating computer-aided design models for mechanical engineering parts, drawings, and assemblies, using modern commercial CAD software.
3. Utilize analysis tools such as finite element methods and mechanism modeling in conjunction with computer-aided design software tools for advanced design of mechanical engineering components.

Required Texts/Readings

Textbooks:

1. **REQUIRED - [Beginner's Guide to SOLIDWORKS 2019 - Level I Parts, Assemblies, Drawings, PhotoView 360 and SimulationXpress](#)**, By Alejandro Reyes MSME, CSWE, CSWI
SDC Publications
Net Price: \$40.00
Published October 31, 2018
784 Pages
Binding: Paperback
Printing: Black and White
Print ISBN: 978-1-63057-220-4 | ISBN 10: 1630572209
eBook ISBN: 978-1-63056-471-1
2. **REQUIRED - [Official Guide to Certified SOLIDWORKS Associate Exams: CSWA, CSWA-SD, CSWSA-FEA, CSWA-AM SOLIDWORKS 2017 – 2019](#)**, by David C. Planchard CSWP
SDC Publications
Net Price: \$36.00
Published December 17, 2018
432 Pages
Binding: Paperback
Printing: Black and White
Print ISBN: 978-1-63057-232-7 | ISBN 10: 1630572322
eBook ISBN: 978-1-63056-490-2

3. REQUIRED - [Analysis of Machine Elements Using SOLIDWORKS Simulation 2019](#)

By Shahin S. Nudehi Ph.D., P.E., John R. Steffen Ph.D., P.E.

Net Price: \$37.00

Published May 15, 2019

544 Pages

Binding: Paperback

Printing: Black and White

Print ISBN: 978-1-63057-234-1 | ISBN 10: 1630572349

eBook ISBN: 978-1-63056-491-9

4. RECOMMENDED - [Introduction to Finite Element Analysis Using SOLIDWORKS Simulation 2019](#), By Randy H. Shih

SDC Publications

Net Price: \$37.00

Published February 15, 2019

512 Pages

Binding: Paperback

Printing: Black and White

Print ISBN: 978-1-63057-235-8 | ISBN 10: 1630572357

eBook ISBN: 978-1-63056-493-3

Other technology requirements / equipment / material:

A key code and instructions to download the 2019 Educational Version of SolidWorks will be provided to all students registered in the Canvas course. You must have this version to complete exercises for this class.

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 calendar](#) web page located at

http://www.sjsu.edu/academic_programs/calendars/academic_calendar/. 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/>.

Course Requirements and Assignments

Course Assignments are provided through the Canvas course site. All materials are directly aligned with course learning outcomes noted above. The Detailed Course Schedule noted below indicates materials to be covered.

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 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. **Therefore, you should plan to spend at least 9 hours per week on this 3-unit course.**

Final Examination or Evaluation

Final Exam will be administered On-Campus and take place on Friday December 13th.

Grading Information

Homework	40%
Exam 1 = Curved CSWA Score	20%
Exam 2 = Curved CSWA-S/FEA Score	20%
Final Exam – Replaces lowest Exam Grade	20%
TOTAL	100%
Extra Credit	0-5%

Final Exam Grade replaces lowest Exam Grade

Exam 1 and Exam 2 Grades are CURVED based upon the highest Score (see below)

Grading Policy:

A	from 100% to 94%	A-	from 93% to 90%		
B+	from 89% to 87%	B	from 86% to 84%	B-	from 83% to 80%
C+	from 79% to 77%	C	from 76% to 74%	C-	from 73% to 70%
D+	from 69% to 67%	D	from 66% to 64%	D-	from 63% to 60%
F	below 60%				

This course must be passed with a C- or better as a CSU graduation requirement.

On-Campus Meetings, Homework, Exams, and Extra Credit:

1. Mandatory On-Campus Meetings: There will be three (3) required On-Campus Meetings:

- Exam 1 = Curved CSWA (Certified SolidWorks Associate) Exam Score
- Exam 2 = Curved CSWA-Simulation/FEA Exam Score
- Final Exam – **ONLY students who do not obtain a “Passing Score” (>70%) on BOTH CSWA Exam AND CSWA/S Exam**

If you do not attend the Exam 1 – CSWA (or you are late), you will be dropped from the course.

2. Exams: There will be Three (3) Exams On-Campus. There are no make-up exams. Exams will be closed book and closed notes and occur On-Campus. If you do not attend an Exam, you will receive a zero grade.

1. Exam 1 = Curved CSWA (Certified SolidWorks Associate) Exam Score (3 hours): On-campus Proctored Exam.

- “Passing Score” = 70%
- Your **Exam 1 Grade** will be curved based upon the person receiving the highest score.

For example: High Score Student = 90%. High Score student Adjusted Exam 1 Grade = 100% (+10%). Your raw Score = 60%. Your adjusted/final Exam 1 Grade = 70% (60% +10%)

2. Exam 2 = Curved CSWA-Simulation (Finite Element Analysis) Exam Score (2 hours): On-campus Proctored Exam.

- “Passing Score” = 70%

- **Your Exam 2 Grade will be curved based upon the person receiving the highest score.**

For example: High Score Student = 90%. High Score student Adjusted Exam 1 Grade = 100% (+10%). Your raw Score = 60%. Your adjusted/final Exam 1 Grade = 70% (60% +10%)

3. **Final Exam:** The Final Exam will be cumulative and occur On-Campus. **ONLY students who do not obtain a “Passing Score” (>70%) on BOTH CSWA Exam AND CSWA/S Exam MUST take the Final Exam.**

- If you **obtain a “Failing Score” (<70%) on EITHER Exam 1 – CSWA Exam, OR Exam 2 – CSWA-Simulation Exam, you must take/attend the Final Exam.**
- If you **must attend/take the Final Exam** and if you **do not attend**, you will receive a **zero on the Final Exam.**

- **Final Exam Grade replaces lowest Exam Grade**

- If you obtain a **“Passing Score” (>70%) on BOTH Exam 1 – CSWA Exam, AND Exam 2 – CSWA-Simulation Exam, you WILL NOT attend the Final Exam and you will receive 100% Grade on the Final Exam. Also, you will be provided with a FREE Certification Voucher for another SW Certification Exam (ONE of the following: CSWA-Additive Manufacturing, CSWA-Electrical, or CSWA-Sustainability)**

3. **Homework:** Homework assignments and due dates will be announced on Canvas. Reduced points may be earned for late homework submissions after the due date has passed, as announced on Canvas.
4. **Extra Credit:** Assigned during the semester at instructor’s discretion. All Extra Credit assignments will be due as indicated in Canvas.
5. The only way to learn is through practice, so make time to complete your homework regularly and on time.
6. **All Submissions will be through the Canvas website and must have your Initials_Assignment_Date format. Be sure the file name is NOT excessively long otherwise it cannot be reviewed, and you will receive a zero grade.**
7. No makeup exams or final exams will be given except for emergency situations.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs’ [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>”

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The [University’s Academic Integrity policy](http://www.sjsu.edu/senate/S07-2.htm), located at <http://www.sjsu.edu/senate/S07-2.htm>, 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](http://www.sa.sjsu.edu/judicial_affairs/index.html) is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.

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.** For this

class, all assignments are to be completed by the individual student unless otherwise specified. 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 Policy S07-2 requires approval of instructors.

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](http://www.sjsu.edu/aec) (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

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Tentative Course Schedule

Subject to Change via Canvas course website

Week	Date	Topics, Readings, Assignments, Deadlines
1	8/21/19	<ul style="list-style-type: none"> • Canvas Class Opens • ACCESS MYSOLIDWORKS.COM • Download and install SolidWorks 2019 • Submit proof of Prerequisites • Introduction/Orientation to Course and Online Format • HW 1 – SW Tutorials 1
2	8/26/19	<ul style="list-style-type: none"> • HW 2 – Level I Text – Chapter 2: Part Modeling
3	9/2/19	<ul style="list-style-type: none"> • HW 3 – Level I Text – Chapter 3: Special Features: Sweep, Loft and Wrap
4	9/9/19	<ul style="list-style-type: none"> • HW 4 – Level I Text – Chapter 4: Detail Drawings
5	9/16/19	<ul style="list-style-type: none"> • HW 5 – Level I Text – Chapter 5: Assembly Modeling
6	9/23/19	<ul style="list-style-type: none"> • HW 6 – Level I Text – Chapter 6: Assembly and Design Table Drawings
7	9/30/19	<ul style="list-style-type: none"> • HW 7 – CSWA Review Text – Chapter 2: CSWA Introduction & Drafting Competencies; Chapter 3: Basic Part & Intermediate Part Creation & Modification
8	10/7/19	<ul style="list-style-type: none"> • HW 8 – CSWA Review Text & Sample Exam –Chapter 4: Advanced Part Creation & Modification; Chapter 5: Assembly Creation & Modification • TangixTesterPro Download and Install (Personal Computer) • HW 9 – CSWA Sample Exam (Using TangixTesterPro Application) • Review for Exam 1 – Parts, Drawings & Assemblies
9	10/14/19 (Monday)	<ul style="list-style-type: none"> • On-Campus Meeting: EXAM 1 = Curved CSWA Exam Score (3 hours) Exam 1 Grade curved based upon the person receiving the highest Score • HW 10 – SW Simulation 1 – Level I Text Chapter 8
10	10/21/19	<ul style="list-style-type: none"> • HW 11 – SW Simulation 2 – SW Tutorials 2
11	10/28/19	<ul style="list-style-type: none"> • HW 12 – SW Simulation 3
12	11/4/19	<ul style="list-style-type: none"> • HW 13 – SW Simulation 4
13	11/11/19	<ul style="list-style-type: none"> • HW 14 – SW Simulation 5 – CSWA Review Text – Chapter 7: Certified SolidWorks Simulation Associate – Finite Element Analysis (CSWA-FEA) Exam • Review for Exam 2 – SW Simulation/FEA Focus
14	11/18/19 (Monday)	<ul style="list-style-type: none"> • On-Campus Meeting: EXAM 2 = Curved CSWA-Simulation/FEA Exam Score (2 hours) Exam 2 Grade curved based upon the person receiving the highest Score • HW 15 – SW Advanced Skills Intro
15	11/25/19	<ul style="list-style-type: none"> • Thanksgiving Holiday Week
16	12/2/19	<ul style="list-style-type: none"> • HW 16 – SW Simulation Extra
17	12/9/19	<ul style="list-style-type: none"> • ALL Extra Credit DUE by Sunday December 8, 2019 • Monday 12/9/19 – Last Day of Classes • Review for Final Exam
Final Exam	FINAL EXAM: Friday December 13th, 5:15pm-7:30pm, E213 ONLY students who do not obtain a “Passing Score” (>70%) on BOTH CSWA Exam AND CSWA/S Exam MUST take the Final Exam. Final Exam Grade replaces lowest Exam Grade.	