

**San José State University
Mechanical Engineering Department**

**ME 165
(3-units)**

**Computer-Aided Design in Mechanical Engineering
Section 01 (23414); Section 02 (29162); Section 03 (30344)**

Spring 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 Sundays 10-11am; Anytime via email (preferred); By Appointment
Class Days/Time:	<u>Online and Four (4) Required On-Campus Meetings and Two (2) Optional On-Campus Meetings:</u> Section 01: Mondays 1:30-4:15pm, E213 Section 02: Mondays 4:30-7:15pm, E213 Section 03: Tuesdays 4:30-7:15pm, E213
Classroom (Canvas):	Section 01: https://sjsu.instructure.com/courses/1313098 Section 02: https://sjsu.instructure.com/courses/1315382 Section 03: https://sjsu.instructure.com/courses/1309120
Prerequisites*:	ME 020, CE 112, ME 130 or MATH 129A

*** You must turn in an unofficial transcript with the prerequisites highlighted by the second class meeting, 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 2018 (key provided via Canvas), and all required textbooks (print or eBook) in order to participate and successfully pass this course. All course material developed by your instructor is 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) optional 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 2018 - Level I Parts, Assemblies, Drawings, PhotoView 360 and SimulationXpress](#), By Alejandro Reyes

MSME, CSWE, CSWI

Net Price: \$39.00

Published October 24, 2017

752 Pages

Binding: Paperback

Printing: Black and White

Print ISBN: 978-1-63057-148-1 | ISBN 10: 1630571482

eBook ISBN: 978-1-63056-403-2

2. REQUIRED - [Beginner's Guide to SOLIDWORKS 2018 - Level II Sheet Metal, Top Down Design, Weldments, Surfacing and Molds](#), By Alejandro Reyes

MSME, CSWE, CSWI

SDC Publications

Net Price: \$39.00

Published January 24, 2018

654 Pages

Binding: Paperback

Printing: Black and White

Print ISBN: 978-1-63057-166-5 | ISBN 10: 1630571660

eBook ISBN: 978-1-63056-415-5

3. REQUIRED – [Finite Element Analysis with SOLIDWORKS Simulation](#), by Robert H. King

Cengage Publishing

Student Edition: ISBN: 978-1-337-61868-7

Loose-leaf Edition: ISBN: 978-1-337-63092-4

4. REQUIRED - [Official Guide to Certified SOLIDWORKS Associate Exams](#): CSWA, CSDA, CSWSA-FEA SOLIDWORKS 2015 – 2017, by David C. Planchard CSWP

SDC Publications

Net Price: \$36.00

Published March 6, 2017

352 Pages

Binding: Paperback

Printing: Black and White

Print ISBN: 978-1-63057-070-5 | ISBN 10: 1630570702

eBook ISBN: 978-1-63056-347-9

5. RECOMMENDED - [SOLIDWORKS 2018 Reference Guide](#): A comprehensive reference guide with over 250 standalone tutorials, by David C. Planchard CSWP

SDC Publications

Net Price: \$42.00

Published December 18, 2017

1024 Pages

Binding: Paperback

Printing: Black and White

Print ISBN: 978-1-63057-150-4 | ISBN 10: 1630571504

eBook ISBN: 978-1-63056-409-4

Other technology requirements / equipment / material

A key code and instructions to download the 2018 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 during the week of May 15-22, 2019.

Grading Information

Homework	30%
Exam 1	20%
Exam 2	20%
Final Exam	30%
TOTAL	100%
Extra Credit	0-5%

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:

- Mandatory On-Campus Meetings:** There will be four (4) required On-Campus Meetings: The first class meeting, Exam 1, Exam 2 and the Final Exam. If you do not attend the first class meeting (or you are late), you will be dropped from the course.
- Optional On-Campus Meetings:** There will be two (2) optional On-Campus meetings where you will be allowed to take: the CSWA (Certified SolidWorks Associate) Exam and the CSWA-Simulation Exam.
- Homework:** Homework will be assigned each week and due dates will be announced on Canvas. **Reduced points may be earned for late homework submissions for up to 1-week after the due date has passed.**
- Exams:** There will be **Two (2) Exams**. There are no make-up exams. **Exams will be cumulative, closed book and closed notes and occur On-Campus.** Partial credit *can* be earned. For Exam 1: If you do not pass the optional CSWA Exam you must take/attend Exam 1. For Exam 2: If you do not pass the optional CSWA-Simulation Exam you must take/attend Exam 2. If you must attend/take an Exam and you do not attend, you will receive zero credit on one or both Exams.
- Final Exam:** **The Final Exam will be cumulative and occur On-Campus.** If you do not pass BOTH the optional CSWA Exam, **AND** the optional 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.

6. **Extra Credit:** Assigned during the semester at instructor's discretion. **All Extra Credit assignments will be due as indicated in Canvas.**
7. **Optional CSWA (Certified SolidWorks Associate) Exam (3 hours): Optional On-campus Proctored Exam. If you attempt and PASS the CSWA Exam, your Exam 1 grade will be 100% and you will not need to take/attend Exam 1.**
8. **Optional CSWA-Simulation (Finite Element Analysis) Exam (2 hours): Optional On-campus Proctored Exam. If you attempt and PASS the CSWA-Simulation Exam, your Exam 2 grade will be 100% and you will not need to take/attend Exam 2.**
9. **If you pass BOTH the CSWA AND the CSWA-Simulation Certification Exams: You will not need to take/attend the Final Exam and your Final Exam grade will be 100%.**
10. The only way to learn is through practice, so make time to complete your homework regularly and on time.
11. **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 – you may want to use your initials.**
12. **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	1/28/19 or 1/29/19	<ul style="list-style-type: none"> • First Class – Mandatory On-Campus Meeting (Brief Meeting) • Introduction to Course and Warm-up Tutorials • Level I Text – Part Modeling
2	2/4/19	<ul style="list-style-type: none"> • Level I Text – Special Features: Sweep, Loft and Wrap
3	2/11/19	<ul style="list-style-type: none"> • Level I Text – Detail Drawings
4	2/18/19	<ul style="list-style-type: none"> • Level I Text – Assembly Modeling • Level I Text – Assembly and Design Table Drawings
5	2/25/19	<ul style="list-style-type: none"> • Level II Text – Multibody Parts, Editing and Other Tools
6	3/4/19	<ul style="list-style-type: none"> • Level II Text – Sheet Metal and Top Down Design
7	3/11/19	<ul style="list-style-type: none"> • Level II Text – 3D Sketch and Weldments
8	3/18/19	<ul style="list-style-type: none"> • Level II Text – Surfacing and Mold Tools • CSWA Review Text & Sample Exam – Chapters 2: CSWA Introduction & Drafting Competencies; Chapter 3: Basic Part & Intermediate Part Creation & Modification; Chapter 4: Advanced Part Creation & Modification; Chapter 5: Assembly Creation & Modification; TangixTesterPro Install and Sample Exam
9	3/25/19 or 3/26/18	<ul style="list-style-type: none"> • Optional On-Campus Meeting: CSWA Exam (3 hours), Pass Replaces Exam 1 as 100% • Simulation Text – Chapter 1: Overview of the FEA Process; Chapter 2: 1D Spring Element Model • Review for Exam 1 – Parts, Drawings & Assemblies
4/1/19 to 4/5/19 – SPRING BREAK – NO CLASS		
10	4/8/19 or 4/9/19	<ul style="list-style-type: none"> • EXAM 1 – Mandatory On-Campus Meeting if you did NOT pass CSWA Exam • Simulation Text – Chapter 3: Truss and Beam Element Models; Chapter 4: 3D Tetrahedral Element Models
11	4/15/19	<ul style="list-style-type: none"> • Simulation Text – Chapter 5: 3D Solid Model Loads; Chapter 6: 3D Solid Model Restraints
12	4/22/19	<ul style="list-style-type: none"> • Simulation Text – Chapter 7: Failure Criteria; Chapter 8: Symmetry Models
13	4/29/19	<ul style="list-style-type: none"> • Simulation Text – Chapter 9: Assembly Models; Chapter 10: Special Topics • CSWA Review Text – Chapter 7: Certified SolidWorks Simulation Associate – Finite Element Analysis (CSWA-FEA) Exam
14	5/6/19 or 5/7/19	<ul style="list-style-type: none"> • Optional On-Campus Meeting: CSWA-Simulation/FEA Exam (2 hours), Pass Replaces Exam 2 as 100% • Review for Exam 2 – SW Simulation/FEA Focus
15	5/13/19 or 5/14/19	<ul style="list-style-type: none"> • EXAM 2 – Mandatory On-Campus Meeting if you did NOT pass CSWA-Simulation Exam • Review for Final Exam
Final Exam	Finals 5/15-5/22: Mandatory On-Campus Meeting if you did NOT pass BOTH the CSWA Exam AND the CSWA-Simulation Exam.	

*** Note: You can ONLY attend sessions for your enrolled Section.**