ME101: ENGINEERING DESIGN: SOLID MODELING 1

FALL 2019
SCHEDULE NUMBERS: 22178, 22179

COURSE INFORMATION

Class Days: TTH
Class Times: 0800-1050, 1100-1350
Class Location: E221
Thomas.johnston@sdsu.edu

Office Hours Times (and by appointment):
MWF 1000-1200
Office Hours Location: E221A

COURSE OVERVIEW

Catalog Entry: Six hours of laboratory. Introduction to 3-D computer-aided mechanical design. Creation of basic to intermediate solid parts, assemblies, and drawings to include orthographic, pictorial, section, and detail views. Dimensioning, dimensional tolerancing, and thread notation per ASME Y14.5M-1994. CREO and SolidWorks software

COURSE PREREQUISITES

None

STUDENT LEARNING OUTCOMES

At the end of the course, students will be able to:

1. Create basic to intermediate parametric solid parts utilizing extrusion, revolve, round, chamfer, pattern and hole features.

2. Create basic to intermediate assemblies which include assembly constraints, exploded and alternate position views, applying colors, materials and textures and interference detection using bottom up and top down design methods.

3. Create basic to intermediate engineering prints including hand sketching, orthographic views, section views, linetypes, dimensioning, hole callouts, thread notation, bills of materials, basic dimensional and general tolerancing as per ASME Y14.5M-2009 standards
ABET STUDENT OUTCOMES

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
8. An ability to apply principles of engineering, basic science, and mathematics (including multivariate calculus and differential equations); to model, analyze, design, and realize physical systems, components or processes.
9. An ability to work professionally in either thermal or mechanical systems areas.

MAPPING OF STUDENT LEARNING OUTCOMES (SLO) TO ABET STUDENT OUTCOMES

<table>
<thead>
<tr>
<th>ME 101 SLO</th>
<th>ABET Student Outcome</th>
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<tbody>
<tr>
<td>Create basic to intermediate parametric solid parts utilizing extrusion, revolve, round, chamfer, pattern and hole features.</td>
<td>1, 8</td>
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<tr>
<td>Create basic to intermediate assemblies which include assembly constraints, exploded and alternate position views, applying colors, materials and textures and interference detection using bottom up and top down design methods.</td>
<td>1, 8</td>
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<tr>
<td>Create basic to intermediate engineering documentation prints including sketching, orthographic views, section views, linetypes, dimensioning, hole callouts, thread notation, bills of materials, basic dimensional and</td>
<td>3</td>
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</table>
general tolerancing as per ASME Y14.5M-2009 standards

COURSE MATERIALS

Textbooks:
3. SolidProfessor, SolidProfessor - CAD Tutorials (R) Purchase from the link on Blackboard

Supplies
1. Ruler/Straight Edge
2. Pencil and Eraser
3. USB Thumb Drive and/or Removable Hard Drive

References
None

COURSE STRUCTURE AND CONDUCT

Lecture Topics

This is an Activity Class

Course Schedule

<table>
<thead>
<tr>
<th>Week # -</th>
<th>Lab Subject</th>
<th>Lab Activity</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Textbook Assignment 1, Drafting Basics, Introduction to Drafting Standards, Orthographic Projection, 3rd vs 1st Angle Projection Linetypes.</td>
<td>Syllabus Quiz, Create Hand Sketch</td>
</tr>
<tr>
<td>3</td>
<td>Textbook Assignment 2 - Introduction to Dimensioning and Dimensioning Schemes.</td>
<td>Quiz 1 – Drafting Basics</td>
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<tr>
<td>4</td>
<td>Introduction to Solid Modeling Basics. CREO Extrusions, Cuts, Rounds, Chamfer and Shell Features</td>
<td>CREO Assignment 0 Quiz 1 – Drafting Basics</td>
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<td>4</td>
<td>CREO Extrusions, Cuts, Rounds, Chamfer and Shell Features</td>
<td>Quiz 2 – Dimensioning Quiz 3 – Solid Modelling Basics</td>
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<tr>
<td>4</td>
<td>CREO Symmetric Blind Depth Type, More Extrude Solid and Cut Features</td>
<td>CREO Assignment 1</td>
</tr>
<tr>
<td>4</td>
<td>CREO Hole Features-Linear Placement and Mirroring Sketches</td>
<td>CREO Assignment 2</td>
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<tr>
<td>5</td>
<td>CREO Linear Aligned Hole Placement, Angle Dimensions, Symmetric Sketches</td>
<td>CREO Assignment 3</td>
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<tr>
<td>5</td>
<td>CREO Offset Edge Sketch, Through Next depth type.</td>
<td>CREO Assignment 4</td>
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<tr>
<td>6</td>
<td>CREO Revolve Features, Mirroring Solid Features, Round and Chamfer Sets.</td>
<td>CREO Assignment 5</td>
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<td>6</td>
<td>CREO Profile Holes, Coaxial and Radial Hole Placement, Patterns.</td>
<td>CREO Assignment 6</td>
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<tr>
<td>6</td>
<td>Textbook Assignment 4 - Introduction to Section Views, Etc.</td>
<td>Assign Project 1 – CREO Wheel Assembly</td>
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<td>7</td>
<td>Project 1 Parts and Start Drawing Set (Parts)</td>
<td>Quiz 4 – Section Views, Auxiliary Views, Conventional Rotation.</td>
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<tr>
<td>8</td>
<td>Create Project 1 Assembly Complete Project 1 Drawing Set (Assembly)</td>
<td>Assign Project 2 – CREO Valve Assembly Quiz 5 – Thread Notation</td>
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<td>8</td>
<td>Textbook Assignment 6 - Tolerancing</td>
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<td>9</td>
<td></td>
<td>Project 1 Due</td>
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<tr>
<td>10</td>
<td></td>
<td>CREO Practical Quiz Quiz 6 – Tolerancing</td>
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<tr>
<td>10</td>
<td>Introduction to SolidWorks. Sketcher and Relations, Extrude Features</td>
<td>SolidWorks Assignment 1</td>
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<tr>
<td>11</td>
<td>SolidWorks Hole Features, Sketcher</td>
<td>SolidWorks Assignment 2</td>
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<tr>
<td>Dynamic Mirror.</td>
<td>Project 2 Due</td>
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<tr>
<td>Assign Project 3 – SolidWorks Valve Assembly</td>
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<tr>
<td>12 Solid Fillets and Chamfers. Through next Depth Type</td>
<td>SolidWorks Assignment 3</td>
<td></td>
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<tr>
<td>13 SolidWorks Hole Placements, Symmetric Sketches</td>
<td>SolidWorks Assignment 4</td>
<td></td>
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<tr>
<td>14</td>
<td>SolidWorks Practical Quiz</td>
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<tr>
<td>15</td>
<td>Project 3 – SolidWorks Valve Assembly Due</td>
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**IMPORTANT NOTICES**

**Class Policies**
These rules are in place to help guarantee your success in this class and prepare future success at SDSU.

First violation of the rules below, it will be brought to your attention and we will make a record of it. Second violation will result in you receiving a Zero on the upcoming assignment/quiz.

**General**
- **Treat this course like a job**
  - You work for us not the other way around. The instructor is your employer and the TAs are your supervisors
- Lab will be conducted with the same expectations as a professional engineering team and work environment
- **Ask well thought-out, informed questions** after trying to solve any issues on your own and/or with co-workers
- **No Talking (Conversations) or headphones** during lectures: Points will be removed and/or you will have to leave the lab and receive a zero on the current assignment.
- **No internet browsing during lab allowed** except for Blackboard and SolidProfessor.
- We may have assigned Seating
- **This is a “Flipped” class.** Much of the course content will be made available online and will be previewed and reviewed in class as necessary
  - Some required notes/video material will be “Front Loaded” for you to look at before class.
  - **Check your Email first thing in the morning** – Announcements and any other important information are usually sent the previous evening
- **All assigned lecture notes, videos and textbook materials are subject to quiz.**
- **All Students much purchase SolidProfessor video tutorial access.** This will be verified.
• Not all work can be completed in class time. **Extra time in our labs or elsewhere or on your laptop/home computer is required.**
  - The lab schedules for E221 and PS231 are posted on the lab doors and the Blackboard website.
  - Open Lab in Library?

File Management

• **Save** and **Backup** to all files to USB Thumb Drive(s), Google Drive
  - Bring all available backups for checkoff including your laptop
• “Lost” work is **not an excuse** for late work. **Do Not Save To the Lab Computer**

Attendance

• Roll will not generally be taken
• **Email Instructor Prior to class** if you are going to be absent from any class meeting regarding the issues preventing your attendance. See Communication Protocol below.
• There will be **Pop Attendance quizzes if attendance is low**

Assignments, Due Dates and Checkoffs

• **No Late Work Accepted** without a note from Student Health Services, local health care provider or **Prior** communication with the instructor. See Communication Protocol below.
• For multiple-model/file assignments, **All models/files must be completed and submitted to receive any credit**
• Use the **Same Filenames for Parts, Drawings, Assemblies and their related folders** as specified on the assignments.
• CAD assignments must be **Uploaded to Blackboard by 1:00 AM of the due date.**
  - Upload the latest Version(s) of CREO files
  - Use **Windows Zip** for Folders (not RAR, Etc.)
  - Allow time for upload to finish and double check for upload completion Email
• **Final assignment checkoff is in class at the beginning of class on the lab computers** not student laptops/personal computers
  - Working on the due assignment is prohibited during assignment check off
• **Cheating and Plagiarism*** – Even attempting to cheat is regarded as cheating by SDSU policy and will result in an automatic 0 Points on the assignment and reported to the Center for Student Rights and Responsibilities/SDSU Judicial Procedures Office.
  - **We will be checking file histories** and Related Usernames at checkoff

Communication Protocol: Failing to do the following will result in no reply

• **Use Email: Do not call instructor’s office phone**
• **Start a new Email String** for each separate concern
• **Use your student Gmail account**
• **Include:**
  - Appropriate Subject
  - Your full name as it appears in the Blackboard Gradebook (Red ID not required)
Course and Section number you are enrolled (Not Course Schedule Number)

- Concise but complete message

- Continue using the same Email String (Same Subject) until all concerns are completely handled

- Do not reply to class group Emails sent from the instructor

Quizzes

- There will be online Blackboard Quizzes. Practical Quizzes and Pop Attendance Quizzes.
- All Online (Blackboard) Quizzes must be taken in the Lab on Lab Computers at the time of the quiz.
- During a quiz keep your eyes on your own computer
- During quizzes:
  - No electronics allowed including cell phones, tablets/iPads, and laptops. All electronic items are to be put away in backpacks unless otherwise specified
  - No talking
  - Keep your eyes on your own computer: No looking left or right with heads or eyes.
  - Backpacks may be placed between students.
  - In the interest of fairness, we may take pictures of suspicious activity.
  - All head caps should be removed or turned around.

- Cheating and Plagiarism* – Even attempting to cheat is regarded as cheating by SDSU policy and will result in an automatic 0 Points on the assignment and reported to the Center for Student Rights and Responsibilities/SDSU Judicial Procedures Office.

COURSE ASSESSMENT AND GRADING

- Final grade is based on a percentage of the total possible points (no curve).
- No extra credit assignments.
- Check your Blackboard Gradebook Scores at the end of Each Class.
  - Any Grading/Score issues must be addressed by the following class
  - My Grades should display raw score, percentage and your current letter grade
- Final score will be rounded up no more than two points at the end of the semester

Grading Percentages

<table>
<thead>
<tr>
<th>Grade</th>
<th>Total Possible</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>94</td>
<td>100</td>
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<tr>
<td>A-</td>
<td>90</td>
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<tr>
<td>B+</td>
<td>88</td>
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<tr>
<td>B</td>
<td>84</td>
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<tr>
<td>B-</td>
<td>80</td>
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<td>C+</td>
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<td>C</td>
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<td>D+</td>
<td>68</td>
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<tr>
<td>D</td>
<td>64</td>
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<tr>
<td>D-</td>
<td>60</td>
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</tbody>
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**ACADEMIC HONESTY**

Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one’s grade or obtaining course credit; such acts include assisting another student to do so.

*Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one’s grade or obtaining course credit; such acts include assisting another student to do so. Cheating of any form including plagiarism (defined by the University General Catalog) constitutes a serious offence. Even attempting to cheat is regarded as cheating by SDSU policy. Cheating will not be tolerated and evidence of cheating by a student will result in an automatic “F” as the student’s grade and reported to the Judicial Procedures Office.*

**TECHNICAL SUPPORT FOR BLACKBOARD**

Student support for Blackboard is provided by the Library Computing Hub, located on the 2nd floor of Love Library. They can be reached at 619-594-3189 or hub@mail.sdsu.edu

**INTERACTING WITH INSTRUCTOR**

The Instructor will conduct office hours. Please use this time to come talk regarding any questions, concerns and suggestions you might have. If you cannot make it to office hours, please email to schedule a meeting time. Please try finding the answer elsewhere (such as by consulting Blackboard, Tutorials, Fellow students or TA’s). Please make sure your emails to the instructor follow the proper protocol of formal communication as mentioned above to elicit a response.

**STUDENTS WITH DISABILITIES**

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. You can also learn more about the services provided by visiting the Student Disability Services website.

To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from Student Disability Services. Your cooperation is appreciated.
STUDENT SERVICES:

A complete list of all academic support services is available on the Academic Success section of the SDSU Student Affairs website.

For help with improving your writing ability, the staff at the SDSU Writing Center is available in person and online.

Counseling and Psychological Services offers confidential counseling services by licensed psychologists, counselors, and social workers. More info can be found at their website or by contacting (619) 594-5220. You can also Live Chat with a counselor http://go.sdsu.edu/student_affairs/cps/therapist-consultation.aspx between 4:00pm and 10:00pm, or call San Diego Access and Crisis 24-hour Hotline at (888) 724-7240.

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**Immediate Access Course**: Some or all of the required course materials for this class are provided in a digital format by the first day of classes and are free through the add/drop date. Your SDSU student account will then be charged a special reduced price for use of the materials for the remainder of the semester unless you opt-out of the content by 11:59 PM on the add/drop date. Please visit www.shopaztecs.com/immediateaccess for additional information about Immediate Access pricing, digital subscription duration, print add-ons, opting out and other frequently asked questions.

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NOTE: Syllabus is subject to change according to the future needs of the instructor and/or students.