

Pittsburg State University
Department of Engineering Technology
Mechanical Engineering Technology Program

Course Intended for Partial Fulfillment of the Pitt State Pathway Curriculum

(Prepared by David Miller, 08/2018)

COURSE TITLE: MECET 121-03 - Engineering Graphics I

COURSE SCHEDULE: Face-to-Face, Monday/Wednesday/Friday, 12:00 – 12:50pm, KTC W203

INSTRUCTOR: David Miller, PhD

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Office: KTC W224c

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Office Hours: As posted on office door or by appointment

COURSE DESCRIPTION: MECET 121 - Engineering Graphics I. 3 hours (3 hours lecture).

Introduction to fundamental principles of graphic communication. Use of computer aided design software to produce 2-D sketches, 3-D geometry, and dimensioned 2-D orthographic views, and use of manual methods for sketching.

TEXTBOOK/MATERIALS REQUIRED

- Shih, R. *Parametric Modeling with SolidWorks 2018*. SDC Publications. ISBN: 9781630571412
- Electronic Data Storage Device (Jump Drive or Cloud Storage)

COURSE OBJECTIVES

- Objective 1 - To develop skills in the use of parametric design software through the creation of 3D models and the conversion of models into 2D drawings and assemblies. (Outcome a)
- Objective 2 - To gain an understanding of the design process and the different communication tools used during this process.
- Objective 3 - To develop proper work habits, including proper use of terminology, dependability, punctuality, and cooperation with teammates and customers.
- Objective 4 - To develop written and oral communication skills supporting technical reporting.
- Objective 5 – Pitt State Pathway Essential Studies Element:
 - **Human Systems within A Global Context.**
 - Students will *describe human organizational systems using a variety of disciplinary and interdisciplinary perspectives*. For a detailed description, see the [Pitt State Pathway documentation](#): Level of Student Learning = Benchmark
 - **Methods of Assessment for this PSP Essential Studies Element:**
 - Students will *list* of the steps of the design process;
 - Students will *describe* their role in a team of designers;
 - Students will *describe* how the design process links customer requirements to a final product.
 - **Tools used to Assess Student Learning:**
 - Students will describe human organizational systems via an oral presentation.
 - A rubric will be used to assess this presentation and the level of student learning.

COURSE TOPICS

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|---------------------------|-----------------------------|-------------------------------|
| • The design process | • Constraints and relations | • Auxiliary and section views |
| • Parametric modeling | • 2D drawing creation | • Assembly creation |
| • Solid geometry concepts | • 2D and 3D annotations | |

GRADING SYSTEM: Grades will be based on the following scale and proportions:

90 - 100%	A	Tutorial Assignments	30%
80 - 89	B	Quizzes	25%
70 - 79	C	Team Project	25%
60 - 69	D	Final Exam	20%
0 - 59	F		

TENTATIVE SCHEDULE OF ACTIVITIES

Subject to change

<u>Week</u>	<u>Date</u>	<u>Class Content</u>	<u>Assignments Due</u>
1	08/20 08/22 08/24	Overview of SolidWorks, the design process, Canvas	Ch. 1 Quiz 1
2	08/27 08/29 08/31	Ch. 2: Parametric modeling fundamentals	Ch. 2 tutorial Quiz 2
3	09/03 09/05 09/07	Labor Day – No Class Ch. 3: SolidWorks sketching basics, design intent, and modeling approach	Ch. 3 tutorial Quiz 3
4	09/10 09/12 09/14	Ch. 4: Feature design tree; part modifications Team Selection	Ch. 4 tutorial Quiz 4
5	09/17 09/19 09/21	Ch. 5: Design intent, dimensional constraints, geometric relations, and parametric relations	Ch. 5 tutorial Quiz 5
6	09/24 09/26 09/28	Ch. 6: Geometric construction tools: trim, offset, convert, and others; Revolutions	Ch. 6 tutorial Quiz 6
7	10/01 10/03 10/05	Ch. 10: Symmetrical features in design	Ch. 10 tutorial Quiz 7
8	10/08 10/10 10/12	Ch. 11: Advanced 3D construction tools: swept, loft, shell, patterns, and others Fall Break – No Class	Ch. 11 tutorial
9	10/15 10/17 10/19	Ch. 13: Assemblies	Ch. 13 tutorial Quiz 8
10	10/22 10/24 10/26	Ch. 7: Parent/child relationships and the BORN technique IAC Meeting – No Class	Ch. 7 tutorial Team Presentation #1
11	10/29 10/31 11/02	Ch. 8: 2D drawings and associative functionality between part and drawings	Ch. 8 tutorial Quiz 9
12	11/05 11/07 11/09	Ch. 9: Reference geometry, auxiliary views	Ch. 9 tutorial Quiz 10 Final Project Models Due
13	11/12 11/14 11/16	Ch. 14: Assemblies and basic motion study	Ch. 14 tutorial Quiz 11
14	11/19 11/21 11/23	Final Design and Fabrication Presentations Thanksgiving Break – No Class	Team Presentation #2
15	11/25 11/28 11/30	Ch. 15: SimulationXpress	Ch. 15 Tutorial Quiz 12
16	12/03 12/05 12/07	Class time for team project work Final Project Presentations	Project competition
17	12/12	Final Exam - 12:00-1:50	

Pittsburg State University encourages students to take full advantage of campus resources. Information about the campus resources and other information, notifications, and policies (academic integrity, dead week, etc.) students should be aware of, can be found through the syllabus supplement link for the current semester that can be found on PSU's web site at ...

<http://www.pittstate.edu/office/registrar/syllabus-supplement.dot>

Additional Details/Descriptions:

Course Prerequisites: In order to succeed, a student should have a basic understanding of the Windows operating system (zipping and unzipping files, opening and saving files, etc). Mac products may be used, but it will be up to the student to figure out how to install and maintain the software on his own computer as SolidWorks was designed for Windows. Use of Canvas and the Internet are required in this course. Any prior knowledge about drafting or other Computer Aided Drafting (CAD) packages (e.g. AutoCAD Inventor, Google SketchUp) is useful, but not required.

Attendance: The course meets for lecture 50 minutes three times a week. Attendance will NOT be taken for a grade; however, students are encouraged to attend at least one session Monday/Wednesday to cover questions regarding the week's tutorial assignment. Fridays will typically be reserved for quizzes.

Classroom Etiquette: Students are strongly encouraged to participate in the lectures through early preparation and questions or comments in class but are asked not to monopolize the entire class period. Students are required to behave in a professional manner and respect the learning environment of others. If students must come in late or leave early, please notify the instructor beforehand and do so in a quiet, non-disruptive manner. Please silence and store all electronic devices and refrain from engaging in distracting activities on the computers. The instructor reserves the right to remove any device deemed to be causing a disruption - this includes, but isn't limited to: cell phones, tablets, eReaders, eCigarettes.

Tutorial Assignments: Tutorial assignments from the textbook will be given most weeks and will be demonstrated via YouTube videos and in person; additional exercises from the textbook will also be demonstrated via YouTube. Some class time will be devoted to tutorial work; however, additional work outside of class may be required. Tutorials will typically be due on Friday by 5:00 PM, CST. Your lowest tutorial score will be dropped so no late work or make-ups are permitted.

Methods: Solutions to problems solved on tests and homework must be logical and based on the subjects of the course. A solution must be understood by the student, fellow students, instructor, and other individuals, today and in the future. A standard solution approach will be required to support clear and concise communication of information. A solution will include: **student name** and **assignment title** in the file name, **expanded feature tree**, **Mass Properties/Center of Mass window**, and should be saved in **ISOMETRIC orientation** at a **zoom level** appropriate to the given part. Solutions that do not follow the guidelines may result in no credit.

Quizzes: Quizzes will be given most Fridays during the regular class period. Quizzes must be taken in the normal meeting room/time unless arranged ahead of time via email. Material will include topics from tutorial work, lectures and textbook readings, as well as any additional material presented in class. Quizzes will generally be 30-50 minutes and will be closed book and notes. Your lowest scored quiz will be dropped and, therefore, no late work or make-ups are permitted.

Final Examination: The final exam will be comprehensive, covering all course topics. The exam will consist of both a written component and a SolidWorks component.

Team Project: Students will be divided into teams to work on a project that will span the entire semester. This project will be explained in detail during class sessions. Peer evaluations of your teammates' contributions will be part of the grading criteria.

Grading Policy: Students must maintain a passing grade in the following course categories: Tutorial Assignments, Quizzes, Team Project, and Final Exam. A failing grade in any of these

categories will result in a grade of D in the class, regardless of the grades in the other class categories. Grading policies and rubrics for individual assignments will be provided at the time of announcement.

Missed and Late Work: No work will be accepted after the given due date unless due to a documented medical necessity or a documented school event. With the exception of medical emergencies, any missed work must be discussed in advance through email.

Jump Drive/Cloud Storage: Students are required to have some method of storing all electronic files for the class. Saving your work as an attachment in an email to yourself is also a good idea for important work (team projects, etc.). Don't save work to the lab computers as it will most likely be erased by PSU administration.

SolidWorks: SolidWorks is installed in a number of labs in KTC. An installation link is also available to students for use on their own personal computers. Contact the instructor if you wish to install the software on your own PC.

Canvas: The course will be administered with the Canvas system. The site will maintain course materials and be used for communications, problem submissions and grading. The site should be checked frequently. The exams may be given in Canvas, so please make sure you are set up beforehand.

Academic Dishonesty: Submitting someone else's work as your own will not be tolerated in this class. Working together on homework assignments is encouraged, but EACH individual must show ALL work for EVERY problem themselves. Examples of academic dishonesty include, but aren't limited to: cheating on assignments or tests, submitting someone else's work as your own, giving your work to someone else, use of solution manuals/assignments from previous semesters, not citing sources on a writing assignment. Plagiarism includes copying from printed solution manuals, from other students, from the web, etc. Determination of what is or is not academic dishonesty is at the discretion of the instructor. If your work is considered to be an act of academic dishonesty all parties involved will automatically receive a zero on that assignment. Your actions could also cause you to receive an 'F' in the course and could result in severe penalties, up to and including dismissal from the university.

Communication Policy: Students are encouraged to interact with the instructor outside of class in person, via phone conversations and over the Internet; the preferred method of communication is via email. Questions sent via Canvas or email will typically be answered within less than 24 hours if received between 8:00am Mondays and 4:00pm Fridays; however, any questions asked outside of the "normal business week" may result in longer than normal response times. The instructor will not discuss homework/tests/assignments within 24 hours of the due date or 24 hours of when they are handed back. Feedback on quizzes and assignments will usually be based on the scope of the assignment; the rule of thumb is "however long you had to do it, expect it to take that long to get feedback."

SPECIAL CONCERNS: Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact the instructor as soon as possible to make necessary accommodations; 7-10 days prior notice prior to an exam is appreciated to allow time to provide necessary materials to the Testing Center. Information about academic support services can also be obtained from the PSU Center for Student Accommodations.